



together anywhere, together anytime



COOPERATION

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ICT-214793

## TA2

# Together Anywhere, Together Anytime

Large Scale Integrating Project  
ICT – Networked Media

## D8.4 Evaluations of TA2 concepts

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### **Abstract**

The project TA2 (Together Anywhere, Together Anytime TA2) seeks to understand how technology can be used to nurture relationships between groups of people who already know each other well. The project will build a number of prototype social media applications incorporating range of innovative technology elements and will assess the impact of the technology on the ability of groups of people to nurture their social relationships. To do this effectively we require theoretical frameworks that adequately describe relationships within and between groups of people and a method or range of methods that can be used to make assessments.

This document identifies a number of different theoretical social science concepts relating to relationships within and between groups. Whilst no one concept is sufficient for our purposes the document suggests that they can be used as a framework within which assessments can be made. An attempt to identify a more rigorous social science based definition of the term “togetherness” is described.

The document goes on to describe how different evaluation methods can be used within a participatory design process to help evaluate whether the goals of the project are being met. The results of six early evaluation experiments are described.

### **Target audience**

This document is for people interested in social mediating systems, social media and the application of social and user experience theory in this area. Furthermore people interested in the process of design research for social media and the obtained results from design research within TA2 will find this document interesting. There is only basic knowledge in the areas described above needed to read and understand this report.

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## Executive Summary

This deliverable describes ways to evaluate the degree to which technology developments can affect the feeling of togetherness experienced between groups of people, such as families where parents and children are all friendly with each other, as they use social media tools to interact and have fun together.

In the TA2 project, the method is to build a number of technology based prototype applications that are designed to link groups of people in some shared social activity, and to then assess whether the applications have been effective in the goal of nurturing the already strong relationships between the groups. The project seeks to achieve a goal that is expressed using the language of social science (togetherness). Experiences supporting this language of social science emerge through intelligently combining technological elements such as cameras, codecs, screens and servers and the mediated social interaction build on these elements.

This report describes how we are trying to assess, and to maximise the impact that technology is having on these high level goals. It is work in progress but is shared with the community as we believe it highlights a key challenge; that of methodically linking a technology development to improved user experience.

We start by describing the challenge we have chosen to tackle, that of defining and measuring the levels of togetherness experienced between groups of people who already enjoy what the literature calls strong ties and what might be called colloquially good friendships.

The report then goes on to describe a number of relevant social science concepts and theories that are used to describe similar and related concepts, such as social presence, connectedness and interaction rituals. An analysis of these concepts provides a framework that we intend to use to help assess the degree to which we are affecting the feeling of togetherness through the introduction of technology based social experiences.

Having established this framework, the next section describes a framework for evaluation. Identifying that we need to use a range of different evaluation methods, and that we need to deliberately evaluate different aspects of the overall user experience (aesthetic, pragmatic and meaning).

The *Method section* includes the introduction of two experimental tools that we have developed before describing in more detail the gamut of experimental methods that are appropriate for use in the course of the research. The two experimental tools are a Togetherness Questionnaire and Familias.

The *Questionnaire approach* appears rather prosaic, but the hypothesis we generated, that a range of simple questions could be derived that would adequately assess the level of togetherness experienced between groups of people, is not supported by our experimental results. The second tool is a set of Familias, illuminated descriptions of example families for whom we should design. Familias are an extension of the persona idea, which are often used in a user centred design process.

Apart from these experimental tools the Method section also provides generic evaluation tools available to the project, and highlights how to choose the right sort of evaluation technique based on an understanding of the situatedness of the concept prototype (can the concept be evaluated in field or must it be evaluated in the laboratory) and of the type of generalizability the results are likely to lead to i.e. do they lead to conclusions which are generic reflections on the concept or to results which could be repeated with statistical significance, in which case they are deemed statistically generalizable. Against these two parameters a number of possible evaluation techniques are identified including diaries, probes lab studies and field trials.

The Experiment section describes the evaluation results that have taken place so far in the project and describes some of the planned evaluations that will take place later. Because the concept prototype applications are still in the early stages of development, the forms of evaluation include needs



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assessment, based on family interviews and concept evaluations based on user group interviews. The results of six evaluations are presented. These include evaluation on each of application prototypes, which for the benefit of the reader who may not be familiar with the work are also described.

In general the early results of our evaluations are encouraging. Users understand that some key social interactions take place in groups and value such interactions and the effect they have. Furthermore they generally seem positive about the conceptual descriptions we have provided for the different prototype applications though they remain adamant the ease of use is paramount and are cautious that the system we describe may not be easy to use.

This document contains all material necessary to follow the subject. For readers with deeper interest in the subject there additional details available online (on Familias and Personas, user evaluations and Family Interviews):

<http://www.ta2-project.eu/D8-4-additional-details>



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## Abbreviations

TA2	Together Anywhere, Together Anytime
UX Framework	User eXperience framework
HCI	Human Computer Interaction



## **Definitions**

Idioculture

Idioculture is defined as “a system of knowledge, beliefs, behaviors, and customs shared by members of an interacting group to which members can refer and employ as the basis of further interaction [21].



# 1 Introduction

Within the TA2 project we aim to develop new technological capabilities that help groups of people to nurture existing strong ties within and between groups of people, such as families or family members and (groups of) close friends (separated by distance). We use the term togetherness to describe the nature of such relationships and set out to define and to be able to measure togetherness (for a more detailed definition of togetherness we refer to chapter 2).

An important challenge in TA2 is to develop concept demonstrators that facilitate social interaction and are perceived as attractive, useful, natural and fun. Providing a means for supporting social interactions and networks is interesting in multiple ways. First, it provides the means to study how new technology could be used to enhance feelings of well-being and connectedness through its effect on social relations. This will lead to more insight in how to best design support for social networks in general. Second, it provides a chance to study social regulating mechanisms that are so important in regulating and maintaining social structures and creating “good” or “bad” social environments. These insights can eventually lead to a better understanding of how to design and maintain social networks in general, in how to enhance social contact and prevent different negative consequences as observed in some of the current social media mostly targeting weak ties.

## 1.1 A networked society

During the last two decades the way we live and relate to others has changed compared to before. We have moved towards an individualistic society in which we more endorse individualistic values, have more freedom of choice, are more capable of handling the opportunities provided by this freedom and perceive our freedom and control in life generally as enhanced [1].

New technologies, such as the mobile phone, automation in general and especially internet and Web 2.0 furthermore made us less dependent on bridging physical distances to access information, organizations and other people. When desired, we now have the possibility to voice and share our interests, opinions and feelings with others from anywhere we like [2, 3].

### 1.1.1 Pros and cons of a networked society

These developments have had a large effect on our society in general as well as on our personal well-being. The sociologist Barry Wellman who refers to the online individualistic society as networked individualism [4] found that physical, real life communities supported by virtual ones lead to more frequent interactions and people being better informed about others in general within the physical community in which they live [5]. Ruut Veenhoven found that individuals within an individualistic society tend to have a higher level of well-being than those from less individualistic societies, at least with the current level of individualism [1]. However, related to the networked society and the use of social media warnings are issued as well for the negative effects these technology can have on our economy, culture and values in terms of disinformation, manipulation, persuasion, irresponsible acts and lack of professionalism in voicing opinions on the world wide stage the internet really is [2].

### 1.1.2 Regulating mechanisms

One of the main influences resulting in ‘good’ or ‘bad’ social environments social regulating mechanisms such as feeling and being responsible for your own acts [2, 6], being trustworthy and trusting others based on the reciprocal relationship [2, 3], social identities that can be confirmed and the like. These social regulating mechanisms are important to us and accepted by most of us, mainly because deviations from the accepted social norm often lead to (partial) social isolation of the actor which is a very undesirable consequence for every human being [7].



New technology often (partially) lacks the social regulating mechanisms and experienced personal accountability for one's actions [2]. This is especially true for some Web 2.0 applications and services. Furthermore most online social media aim to support social networks made up of weak ties and though these ties are important in a number of ways, it is especially the strong ties that influence social regulating systems and enhance our well-being and happiness [7].

## 1.2 The TA2 project aim for evaluations

The following research questions are guiding the work described in this report:

- How can we frame the experience of togetherness from a theoretical and design point of view (chapter 2)? This work is building on previous work described in [D2.1 Design Market Insights](#) [8] and [D8.1 Evaluation Framework](#) [9] and elaborates on this previous work with the research undertaken in 2009.
- What methodologies and/or methods do we need for designing and evaluating togetherness as an experience (chapter 3)?
- What can we learn about togetherness in practice, especially when related to the different TA2 demonstrator concepts currently being developed (chapter 4)? This work is building on the user evaluations and participatory design sessions performed in 2009.
- To what insights and conclusions does the work of 2009 lead for the coming years of the project in terms of theoretical development and user evaluations (chapter 5)?

## 1.3 The TA2 project results from evaluations

By the theoretical work and user evaluations performed in 2009 and by answering these research questions above we have in 2009:

- Helped the people developing the concepts for the different TA2 concept demonstrators and the people implementing and integrating the technology that constitutes the TA2 concept demonstrators to make better design decisions and facilitate the exchange of learning experiences between the different competences and demonstrators with regard to which design choices and solutions are key in creating experiences such as togetherness.
- Organized the dialogue between the project and the outside world in terms of user engagement in the project through the process of participatory design sessions.
- Created an integral vision on TA2 concepts based on lessons learned during the project and especially the evaluations with users.
- Provided first preliminary guidelines regarding the design process and concepts for intuitive and media enriched communication.

## 1.4 Current State of the Art

The experience of togetherness is a concept not well defined in theory nor practice. In TA2 deliverable D8.1 Evaluation plan [9] we described the current state of the art on togetherness and User eXperiences (UX) in general and identified three concepts from social science that are related to togetherness and can help us to frame the concept further. These concepts were: Strong and weak ties, social identity theory and interaction rituals.



Since last year the research effort in the area of Social media intensified in general as we can observe in for example the number of workshops for (well known) conferences such as ACM's CHI (to give an impression, the number of hits in Google for 'Social media workshop 2008' is 1,520,000 the same search for 2009 generates 1,990,000 hits while 2007 gives 1,279,000). Also the number of publications on social media is growing and more and more studies are being performed in this field of research. The main focus on the concept of social media is often on the experience of social media in terms of **individual experiences**. The focus on **social experiences** has not yet fully emerged. Furthermore the focus is often on experiences of social media application **during interaction** and not much attention is being paid to how these experiences affect a person's life **beyond this immediate interaction** with an application. See [28] for further elaboration on these issues.

Togetherness is a concept that affects life, well-being and happiness in general and the influence of social media on this concept is therefore a new interesting area of research from a theoretical as well as design perspective. Especially when applications are focusing on supporting strong ties between people or groups of people as we do within the TA2 project.

## 1.5 Advancements to the State of the Art

In D8.1 we presented the UX framework and took first steps to incorporate the experience of togetherness in this framework for guiding future evaluations [9]. This report adds to the current state of the art as described above in the area of social media and the experience of togetherness by asking the following research questions:

- How can we understand togetherness *theoretically*?  
Our goal is to better understand experiences of togetherness—what it is and what it consists of—and to that end we explored several theoretical perspectives. See: Chapter 2 Theory.
- How can we *evaluate and measure* togetherness?  
We would like to have methods to evaluate and measure togetherness, and to that end we applied human-centered design approaches and developed a questionnaire. See: Chapter 3 Methods.
- What can we learn about togetherness *in practice*?  
Our goal is to be able to develop ICT applications that facilitate people to experience togetherness, and to that end we interviewed (potential, future) users and conducted focus groups to evaluate the TA2 demonstrators together with users. See: Chapter 4 Evaluations.

### **Additional material is available online:**

Please note that this document contains all material necessary to follow the subject. For readers with deeper interest in the subject there additional details available online (on Familias and Personas, user evaluations and Family Interviews):

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## 2 Theory

In this chapter we explore several theories and perspectives in order to better understand togetherness: what it is and what it consists of. We review theories from social science, from design studies and from experience research. We propose a ‘UX framework’ that relates design elements to people’s experiences; this framework can be used for evaluation as well as for design.

### 2.1 Togetherness as a concept

While togetherness can be created and maintained by ICT, it primarily draws upon non-mediated relationships and group activities. However, in contemporary society it is often necessary to include ICT in the management of togetherness in relations because physical distance or lack of time often makes it impossible to meet physically as much as desired. Togetherness in a relation is likely to emerge as an oscillation between mediated and non-mediated interactions and the definition of the concept must include this dynamic.

While the concept of togetherness lacks a strict scientific definition, there are several established concepts that come close to describing what togetherness is about. As isolated concepts, they all lack some of the dimensions that make up togetherness but by providing a synthesis of how these concepts are distributed we can approach a definition of togetherness. We will now examine the concepts of social presence and connectedness and how they can be used in the togetherness framework.

#### 2.1.1 Social presence

Several concepts are clustered around the idea of social presence. Ludvigsen lists a few of these terms: Shared focus, collective action, co-exchange, co-sharing, co-action that all refer to social presence in a given situation [10]. Social presence refer to a cluster of feelings such as: Being there [11]; having the illusion of non-mediation [12]; being in a place [13]; being together in a shared space [14,13]; being together with another person [13]; another person to be real in a mediated environment; having the ability to project oneself socially and affectively into a place/community, etc.

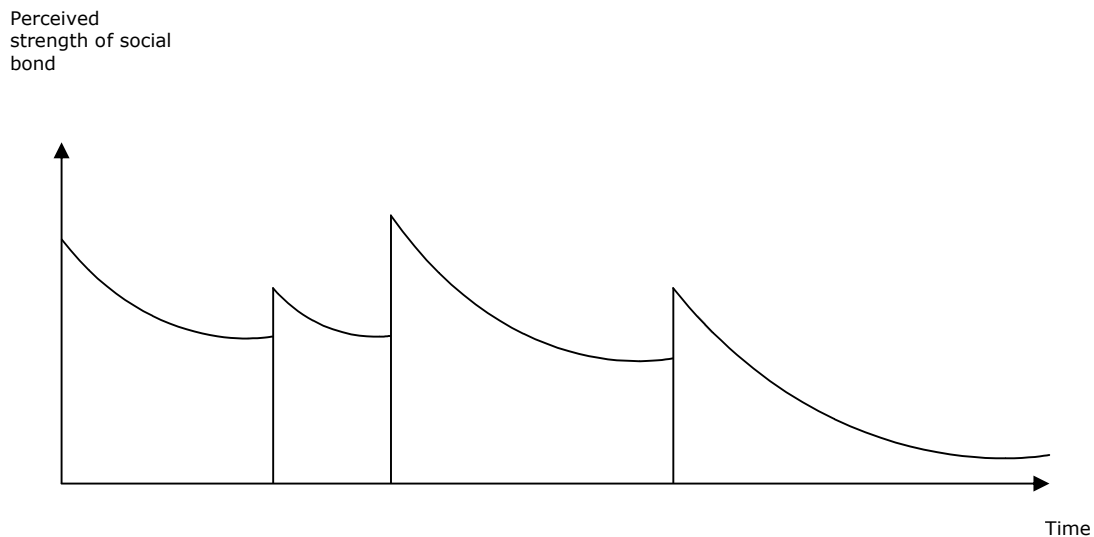
This concept applies to both mediated and non-mediated situations but is mostly used to examine how well a mediated system can mimic the feeling of presence of others naturally experienced in physical gatherings. Thus, in some sense it can be seen as a measure of the media naturalness [15] of the mediated situation.

We could break down the concept in a physical and a psychological component [16] and call the physical one co-presence and the psychological one social presence. While this concept is relevant for creating togetherness and is part of the process in which togetherness unfolds, it is solely focused on the present situation, not how bonds are developed over time. For example, two strangers can experience social presence while separated in space given the right technology. Togetherness on the other hand also implies the understanding of a shared, reciprocal bond beyond the present situation based on past shared experiences or a sense of institutionalised relationship, a sense of being part of a group, for example a family [17]. This is a feeling that can persist even when there is no direct contact. We must therefore also examine this long term component of togetherness and finally how the dynamics between the two should be considered.



### 2.1.2 Connectedness

Since social presence is a concept that only focuses on the present situation, we also need a concept representing the long term bond. We find this in the concept of connectedness. While communication is essential for connectedness, it does not presuppose a continuous open communication channel but merely sufficient communication and contact to allow an existing relationship to be maintained. Even media with a low richness and naturalness such as text messages can create the feeling of connectedness. It is enough for one part to be aware of the other and the other person to confirm this awareness [18]. Further, as long as the participants of a (mediated) interaction believe that they are generating solidarity, it is true in consequences (the Thomas Theorem) [19]. Since this social bond relies on subjective feelings, one part can even believe and act upon a perceived social bond – even if the corresponding party does not feel the same, at least for a while, until the anomaly has been detected.



**Figure 1 A schematic view of the perceived strength of social bond over time**

The psychological feeling of connectedness [20] is related to the Human Computer Interaction (HCI) concept of awareness a similar way to how social presence and co-presence correlate. While connectedness and the related awareness communication can help maintain a relationship, the emotional energy constituting a shared bond must be recharged from time to time by situations of social presence that create new shared moments, what Gary Fine calls the idioculture - shared experiences and beliefs that can be used in further interaction [21]. To properly understand togetherness we must also look at how these concepts relate to each other. Social presence and connectedness are complementary and the dynamics between these two modes are what makes up the concept of togetherness as we shall see below when exploring the interaction rituals theories.

Figure 1 shows a schematic view of the perceived strength of a social bond over time, showing reoccurring shared events (interaction rituals) in the Durkheim sense [22], with a fading strength of the social bond in between. These events may correspond to shared moments of play with TA2.

The peaks in the figure correspond to shared events and gatherings, mediated or not, referred to as interaction rituals. During these events, participants carry out some joint activity, re-affirm their relationships, while both building on and extending their common pool of shared memories, values and goals (idioculture).



### 2.1.3 Physical and psychological

The definition of togetherness has both a physical and an emotional or psychological component that are closely related but not reducible to one or the other. The physical component relates to being together or perceiving the presence of others. The psychological component has to do with a sense of being close to someone and belonging in a certain context, together with others.

The reason for not disconnecting the physical and psychological components into two concepts is that they very much reinforce each other. The activities people perform together are what generate feelings of togetherness and the feeling of togetherness is what creates a desire to maintain the relationship by performing these activities. Both components have to be included to understand togetherness. This view is supported, for example, by activity theory which states that consciousness and emotions are the product of an individual's interaction with people and artefacts that are later transferred to the mind [23].

Togetherness is therefore a physical and psychological phenomenon that evolves in a relationship over time through continuous interactions. This definition means that in a given relationship we will have a distribution of togetherness in time and space. Depending on the frequency and richness of the interactions, togetherness may vary over time. The degree to which an individual will feel togetherness will also depend upon their level of participation, their psychological composition and on the psychological make up of other members of the group. Thus we can expect that perceived togetherness will also vary between different members of a group. This opens up for investigations of how a given ICT system can support togetherness; both how it is able to handle variations in intensity of interactions over time and how it handles different needs and desires of individuals in a group.

### 2.1.4 Interaction rituals

A theoretical framework that can shed some light on how togetherness evolves over time is interaction ritual theory. This is a theory about the nature of reoccurring interactions and habits and about that which helps to maintain social relationships. According to interaction ritual theory, a successful interaction ritual has several components. It establishes a common mood among a number of participants, and a common focus. A common activity (ritual) performed by the members allows members to mutually confirm each others' presence and inclusion in the ritual [24].

The concepts of presence and connectedness map onto two perspectives on interaction rituals in sociology from Durkheim [22], Goffman [32] and Collins [17], respectively. Durkheim, Goffman and Collins recognise the same criteria for what may count as a ritual but they are interested in different scales of rituals. Durkheim's rituals are grand and not so frequent events that return periodically, such as festivals or religious ceremonies. The rituals to which Goffman and Collins refer, on the other hand, are frequent everyday rituals, such as how we behave when greeting someone or having dinner with friends.

If we were to display these on a graph where the X-axis is time and the Y-axis is the level of togetherness we could view the Durkheimian rituals as periodically returning peaks of togetherness that quickly fade since there is no subsequent continuous interaction. For any sense of togetherness to be sustained the large ritual needs to be repeated periodically.. This is where Collins' everyday rituals enter. Functioning as a prelude and resolution of the large rituals they would make sure that the level of togetherness would remain at a high level even in between these rituals. Translated to the TA2 framework the returning Durkheimian interaction rituals would either be physical gatherings or activities performed through the TA2 system, such as JumpStyle (see chapter 4 for an overview of this concept demonstrator). This is related to the presence concept. The everyday rituals of Collins would be more related to connectedness and explored under the TA2 framework of "enhanced social communications".

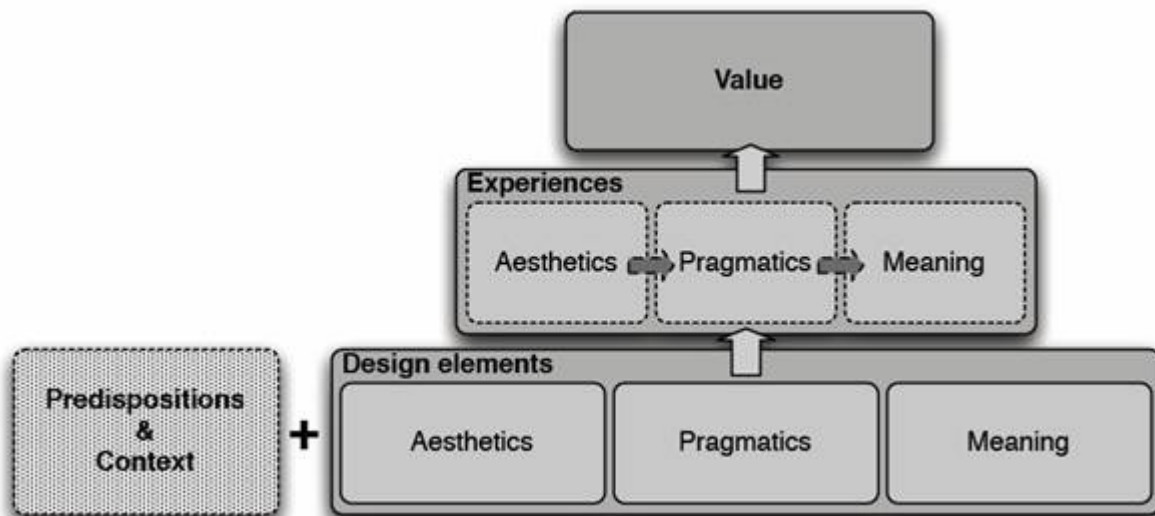


Since we have previously concluded that togetherness is a concept that involves the development of social cohesion over time, combining the ritual perspectives of Durkheim and Collins can provide us with a framework for the dynamics involved in generating togetherness. Collins small-scale rituals serve as a prelude to or resolution of a major Durkheimian ritual.

This framework for togetherness is useful. It highlights that togetherness is a multifactorial concept and allows us to postulate more precisely how a particular technological development may enhance togetherness by, for example, increasing the frequency of the larger Durkheimian rituals, by increasing the degree of togetherness created by the ritual or by reducing the rate of decay of the sense of togetherness between rituals. This model can be used to postulate and assess co-existing technologies relate to, complement or compete with each other in the creation of a sense of togetherness

## 2.2 User eXperience (UX)

A user experience framework developed in the thesis work of Joke Kort has been described within the Evaluation Plan [9] of this project. This is also a public deliverable. The UX framework draws special attention to the design aspects that should be considered and evaluated in creating specific experiences. The UX framework contains a reference towards values people hold dear in their lives in general but does not completely account for the process through which these values in everyday life come to life through a participatory design process. The UX framework is mainly focused on design aspects and features and therefore on the moments of interaction with the product or service and on the experiences that emerge through this interaction.



**Figure 2: The UX framework**

Design aspects and features are important in creating new experiences such as togetherness, though only paying attention to these will not create great design and value. Attention should be paid to the process of creating value through design as well.



## 2.3 Design and values

All design is driven by values. Designers bring their own values to the project, for example their ideas about what they value in life, and the project brief implies specific values: it describes values that the product or the service will bring to people. And users also bring their values to the project, for example when they are invited to discuss their daily lives and what they value in their daily lives, and when they are invited to discuss and *evaluate*, to *value*, ideas, concepts or products or services.

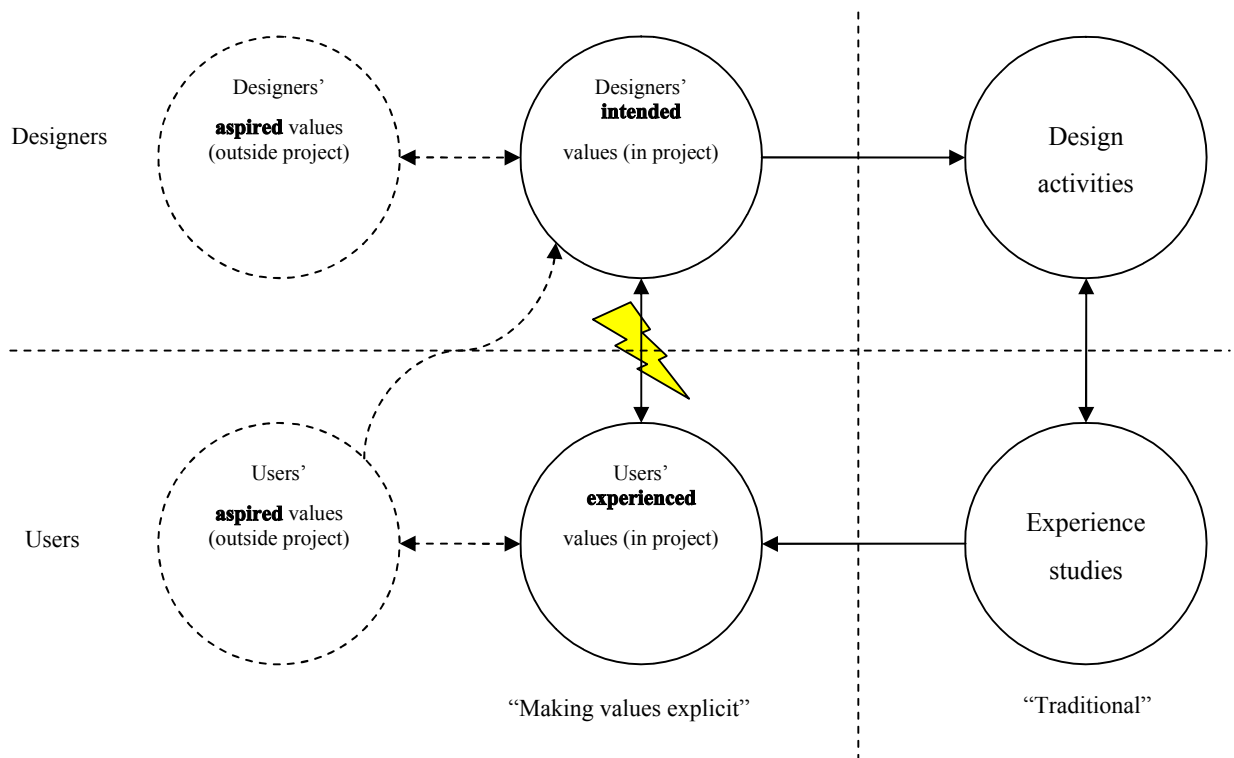
However, these values remain largely implicit; researchers, designers and users rarely articulate, scrutinize and discuss their own and other people's values at length. If values remain totally implicit, then the design process and experience studies take place 'in the dark'; designers create a product or a service and then users interact with it and provide feedback. See Figure 3, the right side: 'Traditional'. However, if they attempt to articulate, scrutinize and discuss their values, then the design process and experience studies can take place 'in the light' and, we would like to propose, it can be conducted more effectively. Designers would better understand their own and users' values, and create something that is 'spot on', and researchers would then discuss more the aspects of design that matter to users, their values. See Figure 3, the left side: "Making values explicit".

Togetherness can be seen as one of the key experiences for social value in the TA2 project, and togetherness can be analysed in terms of other values and experiences, e.g. well-being, social relations, cooperation, enjoyment, autonomy, self-expression, accomplishment, engagement, inclusiveness, privacy or usability.

We are currently developing a model and process that helps to make values explicit which will be reported elsewhere in an international journal. This work on values is 'under construction', but we can already highlight four kinds of values that are most important:

- Designers' aspired values – these become manifest, for example during discussions about the TA2 concept demonstrators, about users' reactions and about how to deal with users' reactions. For example, in reaction to teenagers' critique on Jump Style, that the presented application, jointly practising dance moves, is 'too narrow', and that the system should be more generic and allow all sorts of applications, the designers made their values of 'openness' and 'flexibility' explicit: that the TA2 system should be open and flexible towards a range of applications.
- Designers intended values, in the project – these become manifest in the descriptions and functionalities of the different concept demonstrators (see Focus groups in chapter 4).
- Users' aspired values – these become manifest when people are invited to talk about their daily lives, their experiences of togetherness, and their usage of ICT to communicate, coordinate and cooperate (see Family Interviews in chapter 4).
- Users' experienced values, in the project – these become manifest in the reactions and ideas during the evaluations of the different demonstrators (see Focus groups in chapter 4).

We are, for example, interested in similarities and in differences between these values. Especially an understanding of the differences between designers' intended values and users' experienced values can drive the design process forward constructively.



**Figure 3: Values in design: Relations between designers' intended (and aspired) values and users' experienced (and aspired) values**

By combining both views, the 'Values in design' (participatory design process view) and the UX framework (theoretical view on experiences emerging from design aspects through interaction and reflection on this interaction) it becomes possible to:

- Start designing for togetherness as a value affecting daily life at a very early stage of development when concepts and design are still vague and there is still a certain degree of freedom to change design concepts. Input from the UX framework can be used to explore specific design features important for realizing specific values.
- Detail the UX framework and the design aspects in terms of aesthetics, pragmatics, intended meaning and resulting value (such as togetherness) to guide user evaluations after the applications are developed and can be tested in everyday life.

## 2.4 UX design concepts supporting Togetherness

Togetherness and its experience are central to the TA2 project. However, as addressed in the current state of the art and section 2.1, the experience of togetherness is not very well defined or explored in the context of daily life, nor during interaction itself (between people or groups of people). We identified concepts related to togetherness such as addressed in paragraph 2.1. We furthermore stated that togetherness can be viewed as a concept existing on different levels simultaneously such as an experience, realization or value in everyday life or a temporary experience typically existing during the interaction with others. Both kinds of togetherness are experienced differently, incorporating different feelings such as: (in everyday life when not interacting with others) missing someone, thinking of someone, remembering a special event or (during moments of interaction) experiencing a



shared mood or having fun together, etc. Both expressions of the experiences of togetherness are based on and indicate the same social bond that is shared. In this report we indicate this social bond within which togetherness is experienced as a relational tie. Like a social bond, the tie is inherently a property of the pair and therefore is not thought of as pertaining simply to an individual actor. Using the analysis of Granovetter [25], the "strength" of an interpersonal tie can be considered as a linear combination of the amount of time, the emotional intensity, the intimacy (or mutual confiding), and the reciprocal services which characterize each tie Figure 4 Conceptualizes different characteristics of weak and strong ties as an example of what tie strength encompasses.

<b>Weak ties</b>	Citizens, society	Acquaintances, colleagues	Friends	Family, close friends	<b>Strong ties</b>
	Contact often interest based – Contact often broad and personal				
	Interaction rituals are business like – Interaction rituals are personal and divers				
	Interest based shared understanding – More often common moods during contact				
	Interest based shared understanding – Personal, broad shared understanding				
	Divers moods during contact – Common moods during contact				
	Moderate social cohesion – Intens social cohesion				
	Weaker socail regulating systems such as accountability for one's actions		Strong socail regulating systems such as accountability for one's actions		
	Moderate trust – High trust				
	Moderate reciprocal relationships – strong reciprocal relationships				
	Less frequent interaction rituals and peaks in social communication		Regular interaction rituals and peaks in social communication		
	Deeper dips in between social interaction Peaks		Lesser dips inbetween social interaction peaks		
	Social identity is limited to specific role towards other(s)		Broad, more personal social identity, expressing divers and multiple roles at the same time		
	Less acceptance for social affordances – Willingness to make social affordances				
	Less influence of social norms and values – Strong influence of social norms and values				

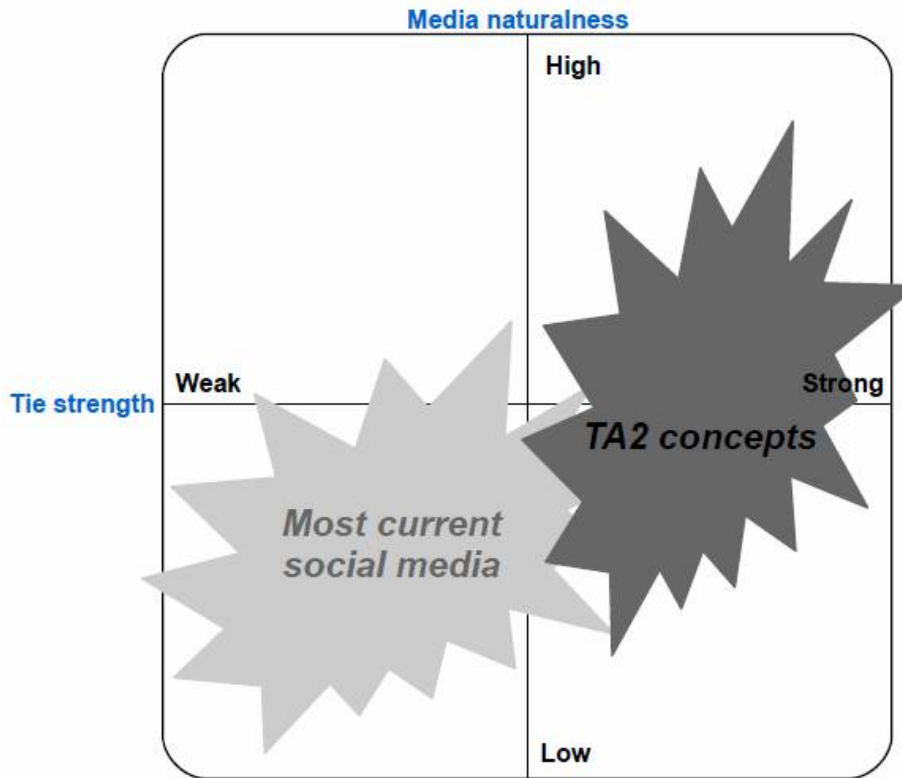
**Figure 4 Conceptualizing strong and weak ties**

We suggest that tie strengths and the different experiences of togetherness will be correlated even though togetherness is different from tie strength. We earlier stated togetherness having a physical part (as addressed in paragraph 2.1 by for example co presence) as well as a psychological part (social presence) in which different kinds of feelings and emotions related to others are experienced. We furthermore stated that togetherness can be experienced as something in everyday life (apart from and beyond directly interacting with other people) as well as during interaction (temporal aspects of togetherness) and that these experiences might be different though related.

Through the TA2 demonstrators we want to enhance the experience of togetherness through mediated (social) communication or different new social media. And the only way we can do this is by providing and/or supporting interaction between people, either very explicitly using audio and video communication, or more implicitly, using micro blogging presence or awareness information. Figure 5 summarizes the focus of the TA2 demonstrators and our research. TA2 focuses on groups who enjoy strong ties and develops mediated communication means that are less natural as compared to face 2



face communication [15] but more natural than most social media currently available (e.g. Twitter, mail, social networking sites, Skype, etc). It differs from current social media in that most common social media aim to support mostly weak ties.



**Figure 5 Focus of TA2**

The goal of TA2 is to understand the role of technology in building and nurturing a sense of togetherness. We in no way suggest that interactions mediated by technology should replace “real world” interactions but suggest that technologically mediated interactions will augment and perhaps even be the cause of real world interactions. Through design we have an opportunity to enhance the psychological experience of togetherness. Through forming, combining and designing physical concepts such as user interfaces and interaction we trigger perception and can affect the experiences of togetherness. The main goal of our theoretical development at this moment is to formulate the relationships between the physical design components that together create the psychological experience of togetherness. The UX framework discussed earlier is a useful tool in this respect.

The physical components that trigger the psychological experience of togetherness are, in this model, called the design elements. They include:

- audio and video interfaces and their quality
- visual and auditory means to enhance the perception of the social presence, awareness, etc
- the media naturalness of the interface
- tactile elements in the interface, etc.

In the UX framework the aspects directly linked to the human perception are called aesthetic design elements. Next to the aesthetic design elements we can identify pragmatic design elements (from which we derive a certain quality of interaction) and interaction design elements (the supported narrative) that contribute to the psychological experience of togetherness. Some examples of these kinds of design elements are:



- Reality Based Interaction (RBI) styles that enhance the experience media naturalness
- interactions based on striving towards a common shared goal
- interactions based on competition
- the opportunity of creating one's own social identity and roles
- support for social role dynamics
- support for the communication, etc.

Different kinds of social interactions can be enhanced or created through these pragmatic design elements. Finally, we have design elements that create meaning for the users and these are the type of design elements addressed in paragraph 2.3, user's experienced values and how these are realized through physical and interaction design. These design elements also relate to the psychological experience of togetherness in a broader context such as everyday life. An example of design elements in this category will include the way that social identity is represented and realised in the product or service (through expression of different roles, cultural elements such as specific norms and values, etc). For an elaborate discussion of the UX framework we refer to D8.1 Evaluation plan [9].

Through evaluations in 2010 additional insight will be gained in how physical components or design elements as addressed above influence, and can best be used to enhance, the psychological experience of togetherness as described in terms of an experience during interaction (e.g. do people feel they really are doing and experiencing something together). Other, more advanced in-situ evaluations will follow in 2010 and 2011. These evaluations will further indicate how the psychological experience of togetherness in real life is or can be enhanced through the TA2 concept demonstrators by letting people use concept demonstrators over a longer period of time and by observing and analysing this usage and the experiences triggered by it.

## 2.5 Consequences for the evaluation framework

In this chapter we have considered different social concepts that play a role in the experience of togetherness (paragraph 2.1), we briefly revisited the UX framework and indicated important facets of the design process itself needed to create values or higher order experiences such as togetherness in everyday life and we summarized these different viewpoints together in the last paragraph.

From the beginning of the project different technical capabilities were identified as being relevant for creating new experiences (such as togetherness) before we even started to conceptualize togetherness itself. As it seems now, based on existing theory and our interpretation thereof, these technical capabilities such as audio and video components and ideas around specific design of interactions are very relevant for creating the psychological experience of togetherness. In 2010 we will further identify and evaluate the different physical capabilities and concept ideas for interactions and their relationship to and influence on the experience of togetherness. We will do this by testing these capabilities and their effect on the experience of togetherness or related aspects such as those mentioned in paragraph 2.1 in laboratory studies. These studies will provide insights and guidelines for enhancing togetherness during interaction.

Additional in-situ studies that will take place later in the project (end 2010, beginning 2011) will provide an insight into the effects of enhancing togetherness during interaction and on the experience of togetherness in real life (the long term effects of creating togetherness through design).



### 3 Methods

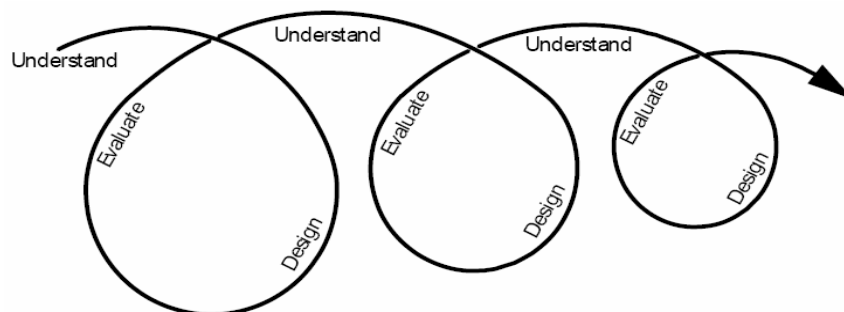
In the previous chapter we explored togetherness theoretically. In the current chapter we develop methods to study and evaluate togetherness. We first describe different existing methods that one can follow. After that, we describe the development of two new methods: a togetherness questionnaire and Familias.

#### 3.1 Different approaches

The involvement of (future, potential) users during research and design is critical to the success of the TA2 project. Our practice of involving users is inspired by the principles for human-centered design (ISO 13407):

- Active involvement of users, to obtain a clear understanding of user and task requirements
- An appropriate allocation of functions between users and technology
- Iteration of design and evaluation processes
- A multi-disciplinary approach.

We see users as active and creative participants in our iterative research and design process. The process provides a way to repeatedly probe and understand users, their practices, needs and preferences and their reactions, assessed through evaluations, to proposed designs. [26].



**Figure 6 Iterative cycles in an innovation project, combining research, design and evaluation [27]**

With the term *evaluation*, we refer to different kinds of *evaluations*, each functional in the process of research, design and development, and each with its own characteristics. There are different goals for evaluation, which require different methods for evaluation:

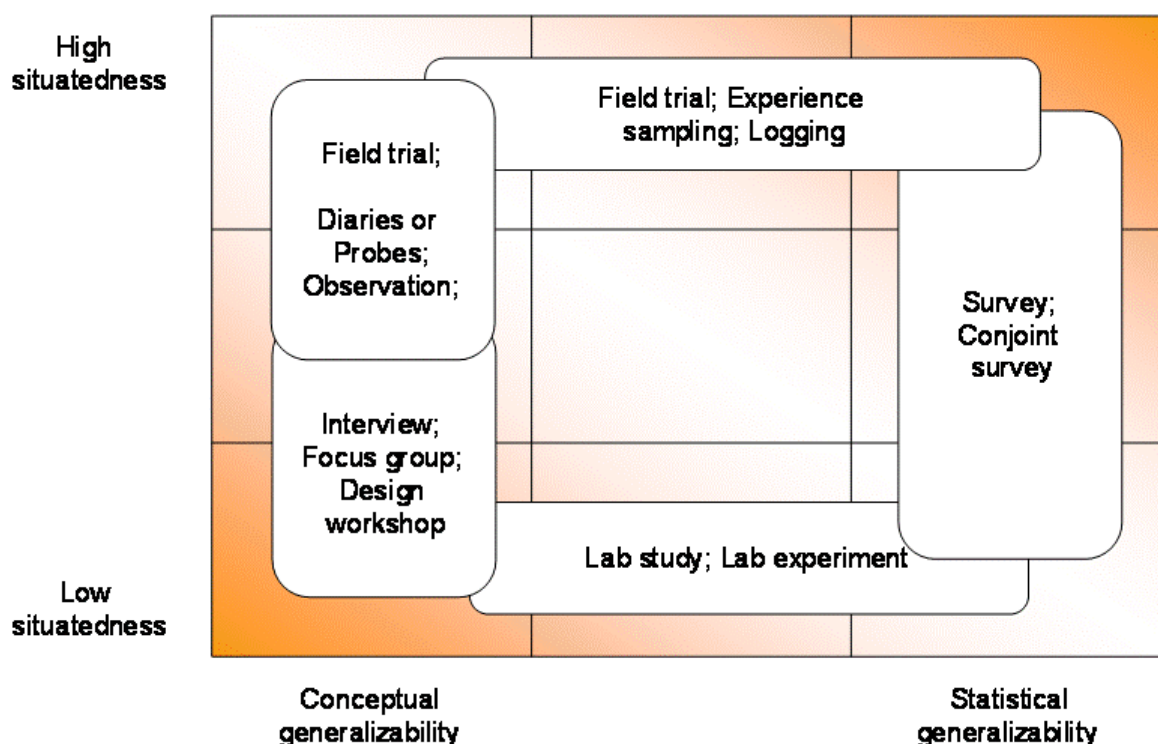
- At the beginning of the process, there is a need for exploratory evaluations (we are currently mainly within this phase); During processes of research and design, there is a need for evaluation methods that help to create and try-out things (we have moved a bit towards this phase and will further explore in the coming year); During and at the end of the process, there is a need for evaluations to test hypothesis and to validate findings (we will perform these kinds of evaluations as well, when the first working demonstrators become available).
- Some evaluations aim at further understanding of concepts and theory, e.g. the concept of togetherness (we are still in this phase); Other evaluations aim at further developing demonstrators and prototypes and practice, e.g. the TA2 applications and system (we are with the user research in this phase). In the coming year we will further integrate both phases so that theory will guide



practical evaluations more directly so that the practical evaluation results will feed our theoretical insights.

- Some evaluations are geared towards qualitative methods and conceptual generalizability; Other evaluations are geared towards quantitative methods and statistical generalizability.

Some evaluations are geared towards 'Live' evaluations, and high situated-ness; Other evaluations are geared towards 'Lab' evaluations and low situated-ness.



**Figure 7 Different approaches to research, design and evaluation in innovation projects [27]**

### 3.2 Evaluations in TA2

In 2008 and 2009 we conducted interviews, focus groups and design workshops (lower left corner of Figure 7). In 2010 and 2011 we plan to also conduct other types of evaluations: evaluations in more realistic contexts, such as observation or field trials (upper left corner of Figure 7); more quantitative oriented evaluations, such as surveys (right half of Figure 7); and evaluations that are both more realistic and more quantitative, e.g. field trials over a longer period that include logging and surveys.

Below is a list of different kinds of evaluations that have been conducted, and evaluations that are planned for 2010 and 2011.

- **Needs exploration: Family interviews**

Late 2008 and early 2009, we conducted *evaluations* in the form of interviews with (potential, future) families. We interviewed approx. five families in each four countries (UK, Sweden, Germany, The Netherlands) and talked with them about their daily lives, about their experiences of



togetherness, about using of ICT and, in several occasions, about (ideas for) the TA2 demonstrators.

- **Concept exploration: Focus groups**

Later in 2009, when the demonstrators were still in early phases of development and were available as screen shots or paper mock-up, we conducted focus groups for each demonstrator. We conducted approx. two focus groups, each with approx. four people, for each of the demonstrators. In these focus groups we explored how people currently experience togetherness, in relation to the specific demonstrator, and whether and how they use ICT, and also presented and discussed the screen shots or paper mock-ups of the demonstrators in order to explore how people evaluate the TA2 demonstrators. Participants were recruited based on their specific interests and usage of ICT.

- **Concept testing: Evaluations of further developed demonstrators**

In the first half of 2010, we expect further developed interactive mock-ups or prototypes, which can then be evaluated, in the sense of concept testing, that is, people will be invited to discuss specific activities in relation to these mock-ups or prototypes; E.g. focus groups about specific activities in relation to specific functionalities.

- **User experience exploration: Evaluate prototypes in lab settings**

In the second half of 2010, we expect applications to be ready as early and partly working prototypes, that is, usable for people within a laboratory setting; we will be able to explore people's experiences while they use the TA2 applications in laboratory settings.

- **User experience testing: Evaluate prototypes in people's 'real live'**

Later in 2010 and in 2011, we expect fully working prototypes, which can be tested in real life settings, e.g. for several weeks or months.

In chapter 4 are summaries of the performed evaluations such as the Family interviews and of the Focus groups for different TA2 demonstrator concepts.

### 3.3 Familias and scenarios

TA2 strives to employ user-centred design principles in all its activities. However in real life, practical concerns often arise. A substantial part of TA2 deals with technology development, which by necessity has to be carried out in parallel to other types of work, such as work on social science, user studies, participatory design, etc. It's a kind of chicken-and-egg problem where the designers and user researchers want to know the capabilities and limitations of the yet-to-come technology, and the engineers want to have the requirement specifications expressing the user needs, and everyone involved want the other party's output as input to their own process. Another limitation is access to (potential and representative) users, as it is often cumbersome and costly to involve end users in complex design and engineering processes, even though everyone involved agrees that this would ideally be the case.

This situation is not unique to TA2, rather, this is a quite common problem, both in research and industry. As such, there exists many methods that attempt to address these kinds of bootstrapping problems in design. Since the beginning of the project, we have repeatedly used many different, complementary user-centred design methods, trying to continually challenge ourselves with the views of ordinary, everyday people. In addition to involving real people in various ways, we have used more "light-weight" methods such as scenarios and personas. These are well-established UCD methods, both in research and industry, that tries to capture the essence of a broad range of issues related to real people using real systems in the real world. The idea is to particularly address developers and others that otherwise would seldom meet "real users" in their everyday work. Scenarios and personas can make user-centred issues very easily accessible by providing fictional characters and related narratives



of how they use some technology for some purpose (See D2.2 for a thorough discussion about scenarios and personas). We have adopted this method in TA2 as a way to continually keep our minds not only on the technology but on the people we intend to support in the end. This is all fine, but there is nothing unique about it.

In TA2, the design focus primarily is on nurturing the relationships between people in fairly small and tight-knit groups, such as families. However, the persona method focuses on individuals, and their goals, needs and preferences. This can be seen as a reflection of the entire area of human-computer interaction, interaction design and related systems which typically focus on individual users [28, 29]. As the design and research goals in TA2 to a substantial extent transcend the single individual user, individual-centred methods only would not be sufficient for our purposes, and as mentioned above, UCD methods tend to focus on individual users. As a consequence of this limitation, we are developing conceptual frameworks (see chapter 2) for dealing with analysis, design and evaluations that enable us to give proper attention to both individual and group issues in the various phases of the research and development process.

Thus, we extended the persona method to cover small groups, which we call Familias (see also D2.2). While the Familia concept build on personas, it differs primarily in that we require the personas and Familias to have well-described relationships to one another. We have developed quite elaborate personas, grouped together in Familias. Along with fictional descriptions of both individuals and groups, we have prepared a set of large wall posters presenting the different Familias (additional D8.4 documentation [31]), which has been distributed to all partners in TA2.

### **3.3.1 Questionnaire**

The 2009 togetherness questionnaire study was conceived as one of these many approaches within TA2 to understand and explore the concepts surrounding togetherness. This was made using factor analysis of the questionnaire items, a method which is in itself not especially controversial, and is widely used in many fields such as psychology. In this context, however, it is a highly experimental attempt at inserting some semblance of quantitative method where at a first glance the subject matter looks to yield itself more readily to qualitative approaches.

The questionnaire occupies a midpoint between the two “pure” extremes of qualitative and quantitative study, and includes elements of both. It was conceived foremost as a preliminary attempt at testing the validity of the method, and was developed in concert with the different TA2 partners, who where each asked to review the proposed items for the questionnaire.

In the questionnaire, the respondents were asked to think of a group of people close to them, such as their family, group of friends, or similar set of close ties. In one field they would categorize the number of people in this group, and in the next briefly describe this group. Then followed twenty Lickert-scale questions with items that might be related to togetherness, communication and related concepts. Beyond this, there were also demographical questions of age, sex, country and a field where respondents could leave comments to the questionnaire.

The questionnaire was made available online, and the various partners of the consortium did their best to solicit the necessary number of responses for the statistical analysis to work properly. As this were only the first steps of a preliminary, experimental study, no effort was made to find a statistically representative sample, something which would have been very difficult and resource-intensive.

The analysis of the data was made in three parts; one more standard processing of the demographical variables and correlations to the twenty items, one qualitative look at both how the groups where described and any insight-giving comments, and finally the exploratory factor-analysis of the twenty items, where we were hoping to find and recognize patterns in the data.



One hundred and forty nine responses were used in the final analysis; the mean age of the respondents was thirty six ( $SD = 9$ ) and they were dispersed over eighteen different nations with Germany and the Netherlands best represented.

Looking at the descriptions of the groups the respondents had in mind, about one fourth ( $n = 32$ ) think of their family only, another fourth ( $n = 39$ ) about their family and friends/relatives and half ( $n = 78$ ) of other groups, such as friends, co-workers and fellow students. From the comments it is evident that the delineation was difficult to make as several respondents cited trouble defining the exact scope of the group.

It was hoped that the factor analysis would point out which questions were most suited for a more quantitative measurement of togetherness, but this clear pattern did not emerge. Three factors were extracted based on the shape of the screen plot and their respective eigenvalues.

One must be careful not to draw too far-reaching conclusions from this preliminary and limited experiment, but one thing seems apparent – as much, if not more useful material was gleaned from the traditional parts of the analysis as the experimental. This experimental analysis was the main focus of the questionnaire, but also the most untried. In hindsight, this is hardly surprising and perhaps more effort should have been directed at the traditional parts.

The chosen groups are very interesting, and it is especially notable that a little more than half cite other people than their families as their close group. This might be related to where you are in life, as some people will have left their “childhood family” and not yet formed one of their own. These individuals will probably have a strong peer group, but often no “household” as we would find in a more traditional family (See for example Wellman, 2001 on networked individualism). It is also clear that many of the respondents had great difficulty in defining this group, and that in some cases they picked groups that had only the respondent as a common denominator, while the other members of the group didn’t necessarily know each other.

The comments also reveal that the attitudes towards technology and mediated communication are varied and sometimes vary; *“I’m also a member of a group which meets in pubs and not in silicon”* as one respondent sardonically put it. Another begs us to consider that *“most people are not so familiar with emails and electronic possibilities”*. While the sample of this study is far from representative of the population as a whole, it is worth bearing in mind that given the basis of recruitment for this sample, the sample might actually be *more* biased towards new technology than the population as a whole. There is also one comment which is worth special mention, as it echoes a sentiment from the earlier family interviews: *“... But this is still too big a hurdle for starting-up and maintenance. Simple access with one button should make distances so much smaller”* (emphasis added).

A number of concrete conclusions have been drawn from the data and can be found below, but the limited nature of the study should be kept in mind.

1. The family is not the closest group for everyone, and care must be taken not to equate the concepts “household”, “family” and “close group”. If TA2 wants to maximize its potential coverage it needs to cater to several types of groups, from the traditional family to the peer group.
2. The issues surrounding groups are very complicated and people have trouble defining clearly which groups they are in. This can have ramifications for privacy, integrity and security issues – are you automatically your friend’s friend?
3. The importance of simplicity has again surfaced and cannot be understated. It is probably a safe bet that the correlation between system simplicity and usage is a strong one. Simply put – if TA2 is simple, more people will use it.



4. The traditional questionnaire approach seems to yield good data, and might be worth considering for the future.
5. The one factor that we could extract with some certainty was factor three, seemingly related to the distinctness of the group.
6. The experimental factor analysis will need more work and refinement if it is to provide reliable and valid results, and even then there are no guarantees. Given the costs involved, it is doubtful whether this approach is viable.



## 4 Evaluations

*It is amazing how much time is wasted on certain development projects by arguing over what users might be like or what they may want to do. Instead of discussing such issues in a vacuum, it is much better (and actually less time-consuming) to get hard facts from the users themselves.*

*Jacob Nielsen: Usability Engineering (1993), p. 74 [30].*

In this chapter we summarize the various evaluations that were conducted in 2009. We conducted interviews with families to explore how they (currently) experience togetherness and how they use ICT as tools to create or experience togetherness. For a detailed report on these interviews see “TA2 family interviews report.pdf” available here: [D8.4 Additional Details \[31\]](#) . In these interviews, we also explored their first reactions to several of the demonstrators that are being developed within TA2. Furthermore, we evaluated the five TA2 demonstrators in focus groups with different relevant user groups. Detailed reports on these evaluations are available from the documents mentioned above. All demonstrators are envisioned to be used on a television screen, with an Internet connection, and in the living room.

The purpose of these evaluations was twofold: to explore the theoretical notions of togetherness in practice; and to evaluate the TA2 demonstrators and to steer the design process of these demonstrators.

### 4.1 Family interviews

The challenge in TA2 is framed in the development of application concept demonstrators that highlight the area of investigation of the project, but that also represent real-world forms of interpersonal communication: applications that are seen as useful, natural and fun.

This research was initiated to explore the social context in which TA2 concepts need to settle. Interviews with families (households) have been conducted in four different countries to learn more about people’s preferences and needs with regards to nurturing social relationships at distance. The family interviews are conducted thanks to the collaboration with the following local TA2 partners: British Telecom (UK), Interactive Institute (Sweden), Ravensburger (Germany) and TNO (The Netherlands). We thank these partners for their cooperation and devotion.

#### 4.1.1 Evaluation goals and research questions

The goal of this evaluation action is to evaluate the scenarios and concept demonstrators by gaining insights in current practices of families in nurturing distant relationships.

This will be done by gathering information about:

- Peoples daily life (activities) in relation to ‘being together’ (e.g. communication at this moment), needs and desires for communication or ‘being together’ which are currently not addressed in their daily activities
- Gathering insight in people’s context in which ‘being together’ is shaped and expressed, current situation, communication means, places, shared activities and needs and desires that are currently not addressed in this area
- Gathering insight in people’s relations, social networks and how ‘togetherness’ is currently expressed in these.

The central research questions are:



- How are distant relationships currently maintained?
- Who plays what roles?
- What is used for this (and what is not)?
- What do families do when they meet in real life?
- What (if) do you miss in current communication/relationship maintenance?
- Can technology help in current communication/relationship maintenance? How?
- What technology (that does not yet exist) could help in this?

#### 4.1.2 Evaluation method(s)

The social sciences comprise academic disciplines concerned with the study of the social life of human groups and individuals.

To gain insights in user needs, we used qualitative interviews. These conversations leave room for the interviewer to collect information on the perception, feelings, attitude and ideas of certain groups concerning a subject or service. It is not intended to get agreement on certain subjects, but to stimulate the differences in opinions. In depth interviews aren't guided by a specific set of questions only. To set some guidelines for the interviews, we have set up an interview protocol. The group interviews are held with all members of a household: a group interview. Each consortium partner was responsible for the recruitment and selection of the participating families in his country. Specific selection criteria and family characteristics were provided. In total 20 families, spread over the Netherlands (TNO) Sweden (II) England (BT) and Germany (Ravensburger) were interviewed.

#### 4.1.3 Evaluation findings

We will take a closer look at four proxy technologies that have an important role in TA2 concept demonstrator and should add to a feeling of togetherness.

##### Gaming

*“We play lots of board games when the grandchildren visit, but if we were to play games through ICT, I wouldn't be able to cheat!”*

In the interviews, we have talked about offline games, as well as about computer games and console games. Attitudes towards offline gaming, like board games or card games, differed a lot between families. The families that did play board games all saw it as a family activity which often involves the children. It appears that it is not so much about the game itself, but more about the (physical) context in which the game is played. The game provides them with ‘an excuse’ to meet, sit down, talk, tease and even cheat. To support the feeling of togetherness during a game which is played over different locations the goal of the game must be studied more thoroughly. Nowadays the game strategy and game play of a game are very important for the attractiveness of a game. It is questionable if these aspects are the key elements of determining the success of a game which supposed to support the feeling of togetherness of the player during the game. Computer and console games are mostly played by children. The adults that play computer games often play casual games. Children also play casual games, but tend to play more (in time) and also play other kind of computer games.

The families that owned a game console often owned more than one. Many of these families owned devices that can be used by one person at a time like a PSP or a Nintendo DS. In few cases whole families played console games together.

The physical and context aspects are so important for new TA2 concepts that a direct translation of existing games to the TA2 environment certainly not guarantees to support the feelings of togetherness.



### **Audio and Video communication**

*“They have shown me their new house with the webcam!”*

There is much to be said about audio and video communication. Audio communication is definitely most used to keep in touch with households at distance. People not only use the telephone, but also audio software on computers like Skype and Voipbuster. Making a call has been widely adopted. Audio communication has several functions. Sometimes it is used to talk about something functional (“We call when there is something important to tell”), often it is part of a routine (“We call each other every Wednesday”), and others use audio communication ‘for no particular reason’ (We talk about nothing actually, but we can do so for hours”). Naturally, these functions are often combined within the household.

Communicating through a video connection seems to influence the topic of the conversations. *“You can actually see if there is something wrong”*. *“They have shown me their new house with the webcam”*. It creates a more personal setting, which often becomes a subject in the conversation. This also makes it more personal, and more close and also gives more room for emotions. *“After we have talked to each other via the webcam, I always have a bit of a lump in my throat. Reality hits you that they are so far away. But in a good way, I wouldn’t want to do without it.”* The visual context also leaves room for non-verbal expressions: *“It is not only the activity itself but also other small aspects like small talk and humor.”*

The context provided by video communication really seems to add something special to audio communication.

*“Seeing the facial expression makes one feel closer to the person and makes it possible to get real emotions across”*.

Nonetheless, video communication wasn’t used that much. In fact, there were a few families that claimed to own a webcam, but were disappointed by its functioning and left it unused ever since. There seem to be a few conditions that must be met. Foremost, the technology is an important issue. The people that have used the webcam, often complained about the quality of the video’s and the time gap between the video and the voice communication. The poor technology discouraged the use of the webcam. Furthermore, several families mentioned to have concerns about the security of the technology and their privacy.

### **Expression of feelings and emotion sharing**

*“Expressing feelings like ‘We miss you’ after a holiday is common expressed by email or letter.  
Expressing emotion brings many warm but also sad feelings”*

The expression of feelings and emotions has been a difficult topic to talk about in the interviews. Theory claims that communication gets more personal as the medium gets ‘richer’. Media richness depends on the functionalities of the medium itself: face-to-face contact being the richest type of communication and writing a letter for instance being the poorest (for now based on two way communication). Audio communication makes it possible to use the intonation of voice and to react instantly on what is said by the other. Video communication in theory is richer, because it adds facial expressions. The richer the medium, the more personal communication can be. Following this theory, one could expect to see more room for sharing emotions and feelings through video communication than through email. The earlier used quote about the lump in the throat supports this. Nonetheless, it was also said that more personal and emotional information was preferably communicated through email. *“Expressing feelings like ‘We miss you’ after a holiday is expressed by mail or letter”*. *“I enjoy writing and can express my emotions well in an email too; but there are times a card seems more appropriate.”*

Without jumping to conclusions, it seems that the way people express their feelings, partially depends of the character itself, but also on the different use of different media. People that use social networks,



instant messaging or other services that allow for short messages to be sent or displayed on a profile site, are more familiar with the sharing short expressions of ones 'state of mind'. These media also allow people to share feelings and emotions with so called emoticons.

Nonetheless, in general people were very concerned with the intrusive nature of ad hoc communication and stressed that it was important to keep their personal space and that some distance to one others emotions is desirable. Especially adults seem to make a deliberate choice how they share emotions, with whom, in what way and at what time. The importance of physical presence and contact must not be underestimated. *"Contact is very physical, like giving a hug"* Sharing of personal information with close contacts over distance is not obvious.

### **Media sharing**

*"We used to sit down with others and look at the photo album together, but since all the photos are stored on the computer now, we barely do that anymore."*

One of the topics in the interviews was the share of personal media like photos and videos. Many participants share photos with their contacts at distance. *"It gives you something to talk about". "It brings back happy memories"*. Sharing videos was less common. Sharing images of daily lives gives you more information about the other person's life. One family indicated that sharing photos had been a social activity that they used to do with others, sitting on a couch. Since most photos are digitalized, this activity disappeared.

People share photos, but there are many different ways to do so. Children make pictures with their mobiles and share them with friends through text messaging or Bluetooth and have fun together while sharing. Also, children are more likely to share photos on social network sites, through which they share pictures with different connections in their networks (from close friends to acquaintances).

Adults also share photos through social networks, but not as much as children do. Interesting is that most families share photos via email instead of for instance online platforms for photo storage like Flickr or Picasa. This could have to do with the fact that some families indicated that they have privacy concerns about sharing personal content through commercial services.

#### **4.1.4 Conclusions Family Interviews**

We gained insights in current practices of families in nurturing distant relationships. In general, we wanted to collect more information on people's communication habits and their needs and desires. Which means of communications do they use to keep in touch and more important; why those? By doing in depth interviews, we collected more information about the choices people make, their preferences but also their concerns. Because of the qualitative nature of the research the findings are not representative, but they do point out some possible drivers and barriers for TA2 concepts.

Before the research we derived some 'Unique Selling Points' from the TA2 demonstrators that are already used in several services that are already available. We shared the views of the participants on gaming, audio and video communication, emotion sharing and media sharing.

Offline games are often a good reason to sit down with friends and families to and socialize. It is not so much about the game itself, but more about the atmosphere it creates. Offline games could be seen as an excuse for communication which especially seems to work well with (younger) children who are less likely to have long telephone calls or send emails.

Audio communication is still very popular to keep in touch with people at distance. The opinions on video communication differ a lot. Some people have never used it before; some others did but suffered from technical issues (from problems with installing the webcam, to poor video quality). The people that did use video communication successfully were very enthusiastic. The context provided by the video initiated new topics for the conversation and made people feel closer to each other.



Emotion sharing has been a difficult topic. More than once, people mentioned that writing a letter, a postcard or even an email gave better opportunities to express their feelings. On the other side, the people that used video communication didn't explicitly say that they talked more about their emotions, but might have shared their emotions indirectly. They did feel 'happy' or 'sad' sometimes during or after a video call and did not explicitly mention this when we talked about audio communication.

People seem to be very conscious about the way they share their emotions. In general they were very concerned with the intrusive nature of ad hoc communication and stressed that it was important to keep their personal space and that some distance to each others emotions is desirable.

The participants shared a lot of information with their distant relationships. Photos are often shared via email, where younger generations also use social networking sites and mobile phones some times. The sharing of photos was perceived as very valuable.

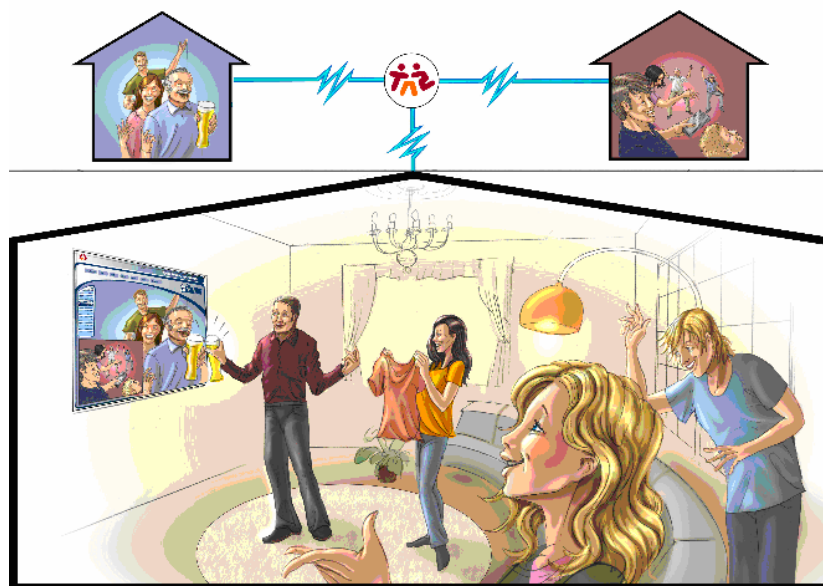
We indicated a few topics that should be taken into account when thinking about the environment in which TA2 concepts will need to settle. First, people need to nurture their relationships at moments that fit their daily schedules. This means that communication is often planned, which leaves little room for spontaneous actions. Second, there are differences between generations as it comes to communication preferences and use. This is not necessarily a barrier but a challenge to overcome these differences and meet everyone's needs. Third, many people expressed privacy and security concerns. This doesn't mean that all concerns are appropriate, but it stresses the importance to develop safe and secure technology where nobody has to worry about their privacy. Last, people need to have a positive attitude towards communication technologies before they intend to use them. Some people seemed to be tired of 'communication everywhere' especially when they use a lot of ICT at work. Problems with application often led to a negative attitude. New technologies therefore need to be really easy to use.

This early research and insight information gained from the interviews can contribute to the early stages of a design process. We will continue to do research and gather information about the social context in relation to TA2 concepts. It will support the evaluation of TA2 concepts, but particularly, it could help the developers to not only make high standard technology, but also keep the needs and desires of society in mind.

For more information about research and evaluation of the TA2 concepts we refer to D8.1 'Evaluation Plan'.

## **4.2 Connected Lobby**

Connected Lobby is a social networking application, which people can use to share status updates or context information and which functions as a portal to the other demonstrators (see below) and other applications. The application allows people to share their current activity or availability for online activities, so that people are triggered to initiate communication. People can control their privacy by setting which other people can see which status updates or context information of themselves and of, for example, their children. The idea is that sharing status updates or context information will facilitate people to use the other applications and to communicate more intensely, and that this will encourage them to experience togetherness. Communication via the Connected Lobby can be both real-time and asynchronous, and is available on television screens and on mobile phones.



**Figure 8 Connected Lobby**

#### **4.2.1 Research questions**

The goal of the evaluation is to explore the needs, desires and habits people have in relation to ambient information (about themselves and others) and the experience of togetherness. We are interested in how sharing information leads to more frequent and more intense communication, strengthens the experience of togetherness and the use of the other TA2 concept demonstrators such as Jump Style, Space Explorers, MyVideos and Sixth Age to which access is provided through the Connected Lobby.

The main research questions for this evaluation of the Connected Lobby concept are:

1. What are the current habits, desires and needs towards sharing, following experiences, awareness / presence information and social communication with and from others?
2. What kind of information is shared during communication in current situations based on online services like social network or (micro)blogging applications.
3. How can situational and contextual information contribute to social communication and therefore create a (stronger) feeling of togetherness?
4. Does more frequent or intense social communication lead to a stronger feeling of togetherness? Does sharing of volatile 'daily life' experiences and 'life events' lead to more intense communication a stronger feeling of togetherness or stimulate the playing of TA2 Concepts?
5. How can social communication in the Connected Lobby stimulate users in playing one of the TA2 concepts (provided in Connected Lobby)?
6. How should Connected Lobby enable this kind of social communication?

#### **4.2.2 Evaluation method(s)**

The focus group method was chosen as research method to evaluate the Connected Lobby concept. A focus group is a form of qualitative research that allows a researcher to interview and lead a group discussion with a larger number of participants than do interviews. Furthermore focus groups stimulate discussion and thereby trigger communication on a diverse range of topics each individual by him/herself would not have thought of. Broad and detailed results can be obtained in limited time this way.



In the focus group session groups of 8 people were asked about their current habits and attitude towards the Connected Lobby concept with a special focus on their preferences, experiences and needs. During the introduction a short description of the focus group session and the goals were given. After the introduction the focus group was divided into two groups. Each group was facilitated and led by a researcher from TNO. The results of the two groups were shared with the whole group and summarized at the end of the session.

#### **4.2.3 Evaluation findings**

The experiences with social media and the points of views largely varied between the two different groups within the focus group session. One group was very positive and welcomed the concept. The other group was very critical and expressed many concerns such as needed effort, attainability and privacy issues with regard to the concept. Both groups had very different views on the value of social media. The more critical group was mainly concerned about privacy issues related to the use of social media and mediated communication. Even though they could understand the preferences of others, they could not easily imagine themselves sharing personal information on a platform that has such an open nature.

The main concern or perhaps requirement of the participants from their experiences with current social media is that the social communication with others must be well dosed and a guaranty for privacy is key for sharing content and experiences. Furthermore the sharing of highlights from everyday life alone is not enough to continue further communication with a contact. The shared information must contain some kind of personal information, experience or something of interest to the other to trigger communication.

The ability to share information via a service on the TV is welcomed as long as there is an ability to comment or react to the shared information. Also, the system must not automatically interfere with the main function the device is used for: watching television.

Participants found it important that the Connected Lobby is not just another service where the user spends much time and effort in order to keeping it up-to-date. Information in the Connected Lobby should come from other sources without much intervention of the user. As long as the investment of time and effort is rewarded, by getting reactions or having contact with other, it remains worth the time and effort to continue using the service.

In particular, the communication from group to individual or another group is very much welcomed by the participants. The establishment of contact between more than two people is positive and perceived as an added value as to communication services on the computer.

A critical comment of the participants is the question if it's really that bad to visit somebody once in a while or having no contact with someone for a period? However, a critical note should be made to this remark; most of the respondents did not have extensive contact with someone over a (large) physical distance. Furthermore it should be stressed that during the focus groups it was not made clear to whom the system applied (strong or weak ties or both).

Summarizing the focus groups provided the following positive and critical reactions:

##### **Positive reactions**

- Nice idea to communicate from group to group
- Doing a group activity on TV is fun. At the PC there is only one chair, in the living room everyone can sit down and participate
- Screenshots look very accessible, less complicated than Hyves (online social network)
- Icons are easy to understand



- Nice concept if it has real added value
- Nice if you can share daily things and people have the opportunity to comment
- Graphics look attractive, it is positive that it is not just a list of contacts.

#### **Critical reactions**

- This concept also requires input and thus much time and effort from the user
- As long as the effort is rewarded by getting comments or contact it remains worth the time
- This should be integrated with other social media or replace it. Otherwise the effort to maintain different social media becomes a loss of time

#### **General suggestions**

- Simplify the input handling. When uploading photos directly ask: “Share photo’s with ... \*) grandfather, \*) Robert, \*)”, all...
- You must have the possibility to make the lobby personal and also the ability to shield yourself or specific content from others.
- If it really comes to the market the lobby must be experienced lively. For instance, Grandpa is sick should be made important
- The disadvantage of concepts and developments like these are that social media are entering the living room, and you may never have to leave home anymore. They could have the potential to limit true social contact.
- Now the PC is often occupied by someone. One should prevent the TV obtaining the same function as a personal device centred in the living room. It should truly support social interaction with multiple persons.

The concept of having a social network on their TV set is clearly appealing for the participants. Creating an opportunity to communicate between groups is expressed as a unique aspect of the service. Unfortunately participants saw only little added value by just enabling communication services like video communication and other TA2 concepts. The stimulation of the feeling of togetherness is predicted to be low in this way.

Creating a lively social community for family and close friends has much more added value but participants immediately also expressed various terms and conditions related to privacy, effort and time and competing existing social media. This concept however could lead to a stronger feeling of togetherness if for instance the frequency of social communication is stimulated by sending comments or short reactions to one another, or when social communication becomes more intense through sharing life events or giving insight into your feelings by expressing emotion in combination with daily life experiences.

We presented a list of topics which participants could indicate as being interesting regarding information about their family and close contacts people indicated the following:

- Major personal and recurring topics: birth, birthday, marriage, graduation, promotion, holidays, trips, etc.
- Personal, volatile topics, e.g. opinion, experiences, interests, hobbies, illness, photos & videos, recipes, preferences, etc.
- Personal contextual interests and topics, e.g. world news, regional news, local weather, etc.
- ‘Who, What, Where’ one-liners stating: current location, programme one is watching on TV, favourite TV shows, availability, presence, gossip, etc.

Based on the focus group information a model for understanding how the Connected Lobby can enhance social communication and facilitate experiences of togetherness was formulated, and a roadmap for further development of the Connected Lobby are proposed.



The Connected Lobby enables people to share volatile information or ‘life events’, that enable people to engage in (more) frequent communication, which can create a positive feedback loop (more information sharing and more frequent communication). This can result in more intense communication, and the usage or playing of TA2 demonstrators, which, in turn, enable people to experience (more) togetherness.

Although more research is needed, we speculate that sharing of volatile ‘daily life’ experiences and ‘life events’ can result in more frequent and more intense communication and thus facilitate people to experience (more) togetherness, also by playing motivating them to use or play other TA2 demonstrators.

With *frequent* communication we refer to:

- Communication type: ‘cliché’, factual
- Topics: environment, behaviour, capabilities
- Relatively broad audience or group (receivers or group partly unknown)

With *intense* communication we refer to:

- Communication type: evaluative, emotional (‘gut level’)
- Topics: environment, behaviour, capabilities, values and beliefs, identity
- Relatively narrow audience or group (all receivers of the group are known)

Ideas for further development of the Connected Lobby:

### **Step one**

- Enable *video communication* and integrate the TA2 demonstrators
- Develop rules and guidelines for users to manage their privacy
- This is intended to facilitate (more) *frequent* communication

Developing rules and guidelines for privacy are critical for the Connected Lobby, and for all TA2 demonstrators. Privacy must be taken into account right from the start of application development, and before prototypes are put into the hands of people. The idea is that such rules and guidelines can be developed for the Connected Lobby, and these can then be used within the other TA2 applications, also because the Connected Lobby functions as a portal to these other TA2 applications.

Some first ideas for these rules and guidelines:

- Distinguish between ‘small groups’, with whom one may want to share relatively a lot (e.g. with family and close friends), and ‘larger groups, with whom one may want to share relatively little (e.g. contacts from social networks such as Hyves)
- Enable people to manage their own privacy (e.g. Anita can set her privacy so that her brother can or cannot see her messages or her status), to manage other people’s privacy, e.g. of their children (e.g. Anita can set her privacy so that her children’s messages or status are visible or invisible to her brother), and manage the ‘reach’, that is, how close-by or far-away people one shares (e.g. Anita can set her privacy so that her and her children’s messages and status are visible or invisible to her brother and his direct family, but not to her brother’s friends or colleagues.

### **Step two**

- Enable *sharing of photos and videos*
- Enable social communication and TA2 demonstrators, using personal information, presence information and contextual information from various relatively simple sources
- This is intended to facilitate (more) *intense* communication



### Step three

- Enable people to *integrate information from currently used social networks*, such as Facebook, Twitter, Hyves, etc.
- This is intended to leverage people's current, other social networks

### Step four

- Enable *dynamic* social networks

## 4.3 Jump Style (Child's Play)

Jump Style is an application that people can use to create and share video clips creatively, including ways to communicate. For example, two teenage boys record a video of them dancing Jump Style, and send it to their cousin. He then practices his dance, makes a video of it, edits it into the original video and sends it back to the two boys to watch. They can also practice or perform their dances simultaneously on two locations and see and hear each other dancing real-time. During the process of creating and editing, they can engage in competition (e.g. showing off, creating challenges) or in cooperation (e.g. teaching, learning) and have fun. Togetherness is encouraged between people at each location and between locations.



**Figure 9 JumpStyle (Child's Play)**

Some **key features** of this system to stimulate the emergence of experiences are:

- Provide a platform with which people can share and jointly act real time or asynchronous content in which they themselves feature (e.g. real time video of themselves is projected into a scene already existing or recorded elsewhere. Furthermore real time communication means such as audio are provided too). Thus creating an experience of doing something together, maybe even the illusion of being together close to a real life experience.
- The system is intended to support social interactions between children (kids (5 to 10 years) and teens (11-15 years)) and provide means to explore, express and share their interests with others real time or asynchronous.

**Key experiences** are:

- Doing something together, creating the experience of togetherness (either real time or asynchronous) through cooperation, sharing of ideas and interests, knowledge such as certain 'moves', shared activities or challenges (competing with each other or against others).



- Self expression, identification, pride, etc. through being able to show what you can do to others or by mirroring others in cooperation or winning competitions. Through teaching others new things and learn new things yourself (self development).
- Fun, enjoyment and immersion during the whole process of creating, cooperating, performing together and sharing.

**Key evaluation interests** are therefore:

- What kind of experience of togetherness is created? Do kids and teens really share more during this social communication of their interests and do they take pride in what they did and how affect these feelings the experience of togetherness?
- Do the effects of together performing an activity create a real life illusion of being together practising a dance? And does it stimulate the feeling of togetherness after the interaction as well?
- Can kids and teens cope with the system in a pragmatic way? How do people experience the ease of use, how do they accept these new concepts of social communication and do they enjoy them? Do they find them immersive and fun to participate in?

#### **4.3.1 Research questions**

The objectives of this evaluation are: to explore teenagers' current behaviour, needs and preferences towards their hobbies and their usage of ICT, with a focus on togetherness; and to discuss and evaluate and further develop and improve the Jump Style demonstrator, which is being developed within TA2.

The objectives and interests mentioned above were made operational into four research questions:

*1) What are teenagers' current behaviour and wishes towards their hobbies and their usage of ICT?*

We are particularly interested in hobbies that relate to togetherness, such as dance, music, sports or parties, and in their usage of ICT in relation to these hobbies and togetherness, such as the use of a camera and YouTube to create and share videos of their hobbies.

*2) How do they evaluate the Jump Style demonstrator? And, more general, how do they evaluate a concept like Jump Style, e.g. for applications other than dance?*

Our findings can be used to further develop and improve the Jump Style demonstrator, and to develop ideas for other or wider applications than dancing together.

*3) Which values are in play, in relation to their hobbies, their usage of ICT and their evaluation of Jump Style?*

Our findings can be used also to further our understanding of togetherness and of the ways in which ICT can help to facilitate people to experience togetherness.

*4) What are relatively strong and relatively weak aspects of the current Jump Style demonstrator? And how can it be further developed?*

An understanding of the strong and weak aspects of the current version of the Jump Style demonstrator can help to further develop the application.

#### **4.3.2 Evaluation method(s)**

An expert review was conducted in order to answer research question 4: about strong and weak aspects of the current Jump Style demonstrator and how can it be further developed.

Furthermore two focus groups with teenagers were conducted, about their current behavior and wishes, their evaluation of the Jump Style demonstrator, and about values that are in play. The focus groups were conducted on 1 October 2009, in Amsterdam. In the focus groups a total of 8 teenagers



participated. All 8 came together, but the actual focus groups were conducted mostly separately, so that one can speak of two focus groups, with four participants in each. The participants were selected by a specialized agency, based on their hobbies and on their usage of ICT, and they were selected as 'pairs', as friends of each other.



Figure 10. Impression of the location in which the Jump Style focus group was conducted, the Van Hellemond, consumer research facility)

### 4.3.3 Evaluation findings

The various remarks from the focus group are summarized below.

#### *Overall comments:*

- Communication between people in separate places. Nice if friends or family are living at a distance and you want to see each other more often.
- Similar to MSN (instant messaging) or Skype or putting a webcam on your PC.

#### *Perceived advantages:*

- Positive reactions on the possibility to create, edit, send and receive videos (although you could do that with YouTube as well)
- Added value of synchronous two-way video communication (which would be new)
- Compared to e.g. MSN, where one person sits alone *here* and one person sits alone *there*, with this application you can sit with a couple of friends *here* and a couple of friends *there*.
- You can see and hear and speak naturally with each other, rather than only type and read, as with MSN.
- More active and engaging than just watching television.

#### *Perceived disadvantages:*

- The participants anticipate that the experience of togetherness in the current set-up could be limited; e.g., they found it hard to imagine that they would experience the people *there* as if they were really *here*.
- Focus group participants anticipate that the hardware will be very expensive, and therefore only limited to the living room (if at all), and not, e.g. one extra in their own bed room.
- If the application is *only* for *dancing together*, than it is too narrow; the target group would be too small.
- Since the application is intended to be used with the television in the living room, it not very suitable for outdoor activities (e.g. skateboarding) or 'wild' activities (e.g. karate)



- Since the application is intended to be used with the television in the living room, it is not very suitable for ‘private’ activities, since the living room is ‘public’; parents or siblings can walk into the living room any moment.
- Risk that people will get confused by what they see on the screen, e.g., people moving ‘through’ each other, from left to right and from right to left, or people growing in size as they move towards the camera.

*Considerations for further development:*

- The application looks complicated to some participants, especially if you look at the TV screen, with a lot of menu options and buttons on the screen, filling-up a large part of the screen, when it would be nicer to have a large TV screen full of dancing people while you are dancing.

A solution for that is already being developed; that is, pushing a specific button on the remote control makes a specific set of menu options or buttons appear, and after selecting one, these menu options or buttons disappear. The developers will critically review all the menu options and buttons and make them as simple as possible—there is, of course, always a relation between the complexity of the application and the complexity of the user interface.

- More focus on the platform and a diversity of possible applications of the platform, rather than focusing on one specific application. For example position an application with more general functionality, i.e., not only dancing together but other (physical) activities as well. After initial use, people will find other applications themselves. Ideas for other applications:
  - Doing any sorts of activities together, practising things together, e.g., doing homework together, sharing and swapping results, being able to see that the other person is also working, which would be encouraging, organizing meetings or other joint activities with some people *here* and some people *there*
  - They also discussed being able to look at people at a party at another location, e.g., a club, like in the television program ClubCam. This will involve privacy issues, because the people at that party or in that club will have to be informed and will have to give permission to be ‘spied upon’ by others...
- Some participants talked about a ‘buddy list’ and being able to see whether other people are available or online. These sorts of functionalities will be provided by the Connected Lobby application.

Position the TA2 platform’s unique proposition, i.e. that it allows a group of people in one place to experience togetherness with a group of people in another place. This is different from, and more than, e.g., enabling a group of people to experience togetherness at one location, e.g., when parents and children are playing with the *Nintendo Wii* in their living room, or enabling individual people to experience togetherness between locations, e.g., when people at different locations log into the Xbox’s online gaming network (although max. four people in one location can plug their controllers into one Xbox simultaneously).

*About the evaluation and evaluations in 2010*

We need to bear in mind that the overall goal of the TA2 project is to develop an innovative platform and to develop several applications to practically illustrate and demonstrate the platform’s capabilities. The goal is not to develop a feasible and viable product.

However, we started the focus groups with talking about one specific application, Jump Style, and only during the course of the focus group we shifted the emphasis to a more general discussion of the platform and possible other applications. As a result, the focus group was perceived by the teenagers as an opportunity to talk about this one application—as one specific stand-alone product, not as a more general platform—as if we were doing market research into the feasibility or viability of a specific

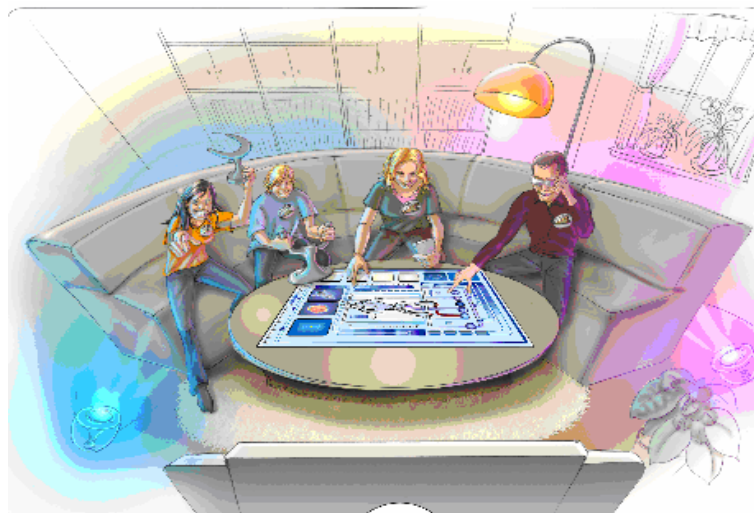


product. Because of their focus on the specific application, they suggested, for example, marketing the application not as a separate application, with the risk of failure, but as an application on top of another, already successful platform. (See below for a discussion of application versus platform.)

In 2010 we plan to do more evaluations, for example, focus groups with teenagers, in which we will focus more on the platform and on a range of applications—rather than focusing on one specific application. Furthermore, a mock-up (partly ‘Wizard of Oz’) of new and improved user interfaces will be developed in 2010, for example with options only appearing ‘on demand’, which can be evaluated as well, for example in the same focus groups.

#### 4.4 Space Explorers (Family Game)

Space Explorers is an application people can use to play games from two locations, as if they are together. For example, two parts of one family are at different locations and play ‘Space Explorers’, a game in which participants cooperate to beat a common enemy. The system is engaging and immersive and adds two functionalities to a normal board game: real-time video communication on large television screens (at each of the locations), and a multi-touch, multi-user table that automates part of the rules of the game play. Some game elements are virtual, other are real. The game lasts approx. 15 minutes, in order to facilitate frequent use without too much demand on one’s time. Togetherness is encouraged between people at each location and between locations.



**Figure 11 Space Explorers (Family Game)**

Space Explorers is based on a commercially available game (Space Alert), to which two elements are added: a screen that allows real time video and audio communication between people at different locations; and a multi-touch table which shows the board game and automates some of the game play.

Some **key features** of this game to stimulate the emergence of experiences are:

- The group of people have a common goal (combat a common enemy), providing challenge and a certain degree of (necessary) cooperation to obtain this goal
- The game is short passed, approximately 15 minutes, supporting brief periods of playing and interaction, which stimulates regular play without too great demands on one’s time.



- The game is turn-based. Players listen to an audio track that provides information about the attacking enemies and other dangers. While listening, they plan their actions together (cooperating). The actions are afterwards executed turn based providing time for players to communicate and evaluate the chosen strategy (though the steps taken are set and cannot be changed). This results in winning or losing.
- The game is played from different locations. Players either are at the same location playing with others at a different location or all players are contributing from different locations. This introduces direct (people at the same location) as well as mediated (players at different locations) communication possibilities. More than 2 different locations are supported.

Some **key experiences** that are intended to be supported by this game are:

- The experience of enjoyment, fun and immersion.
- The experience of togetherness, through cooperation and communication with a lasting effect beyond game play.

**Key evaluation interests** are therefore:

- Does the game create good aesthetic experiences (beauty, well structured, nice forms and colours, etc)?
- Does the game provide the right level of challenge? Individually (is a player stimulated and challenged at the right level without encountering pragmatic issues that so to say ‘spoil the fun’) as well as socially in cooperation with others (can players challenge and cooperate with each other in a good way).
- Do players, and if so how do players experience togetherness while playing and after playing? Does the experience of togetherness last after playing and what effect does it have on the social relations with others? Does it change social relationships? How does playing this game influence the feeling of togetherness when people know each other, partially know each other (some new players and some familiar players) or don’t know each other at all?
- Part of the game is supported by a system (observing the rules and executing the planned actions), what effect does this have on players’ understanding of the game (rules, system), the challenge provided, enjoyment, fun, immersion, the experience of excellence and expertise, etc. when part of the control lays with the system?
- With a combination of physical and virtual game elements and communication a different social setting is created from board games only and console based only multiplayer games. What is the effect of this mixed setting on the experience of togetherness, fun, enjoyment, immersion, etc? And the long lasting effects on social relationships?

#### **4.4.1 Research questions**

The objectives of this evaluation are: to explore the needs, desires and habits of people in relation to board games played in a group and aspects of togetherness; and to explore and evaluate ‘Space Explorers’ with game experts in order to gain insight in especially the pragmatics aspects of the game (perceived ease of use/understanding, attractiveness of the game system, the challenge provided, etc).

The above mentioned objectives and interests were made operational into three research questions:

1. What motivates people to play games?
2. How do people evaluate the Space Explorers demonstrator?
3. Which togetherness-related-values and which togetherness-related-design-elements do they talk about?



#### 4.4.2 Evaluation method(s)

One focus group was organized in order to let potential users evaluate the Family Game / Space Explorers. The focus group was organized in cooperation with *Spelgroep Phoenix* (playing group) ([http://www.spelgroepphoenix.nl/index.php?story\\_id=711](http://www.spelgroepphoenix.nl/index.php?story_id=711)), a not-for-profit foundation that enables its members to come together one night a week to play board games. The focus group was conducted during one of those nights, at their location. This approach allowed us to study a group of people in a natural setting.



Figure 12 Spelgroep Phoenix

#### 4.4.3 Evaluation findings

The various remarks from the focus group are summarized below.

##### *Overall comments:*

- Group dynamics and social interactions between the people playing are key to the board game play experience and to the experience of togetherness: playing with the game; playing between the players; the game *on* the table and the game *over* the table.
- What they like about coming together, physically, to play, requires that they meet in a specific place and at a specific time. With the proposed system, people will still need to make arrangements to be at a specific location, that is, at home, in the living room, because of the necessary equipment is there, and, in some cases, they will still need to make arrangements to be there at a specific time, when they want to meet specific people. If they are not looking for specific people, then they can, for example, arrange to meet random people online, whoever is online at that moment.
- A cooperative game, like Space Explorers, can be less appealing for some game players, when compared to competitive games. The game dynamics of cooperative games are critical; if these are good, the game play is good, even though the game is a cooperative one.

##### *Considerations:*

- One idea from the focus group, is to create a set-up in which the screen and the table are very close to each other, so that the screens disappear, and the tables grow into one, shared table, in order to facilitate the experience of togetherness. ‘If you are playing with people from different locations, people should be able to focus (also) on the television, so that they can include the people in the other location, rather than focus only on the people at your own location’. One possible way of encouraging togetherness is to motivate players to look at the other location, that is, to look at the video screen, for example, by presenting an important play element on that screen, such as the ‘radar’.
- A kind of video and audio communication which enable people to experience togetherness between *here* and *there*, and to communicate with each other in very subtle ways. This can be done in several ways; e.g., by providing very high quality video and audio communication. Or it can be done by putting the screen and the table close to each other, to create the illusion of sitting around one table—which, by the way can be a wish typical for board game players, and can be different



for computer game players. Or it can be done by ‘background substitution’, in which the stable background (e.g. the wallpaper) is subtracted from video signal, so that only the moving foreground (e.g. the people) remains, to which an additional, artificial background can be added, e.g. a space ship (see the *chroma key* idea of one of the participants).

- The touch and feel of a board game needs to be there, including the touch and feel of physical pieces, also if you are playing online, in order to facilitate a good game play. Interestingly, the lack of tactile interaction between *here* and *there* can become a problem, especially when the video and audio communication between *here* and *there* enables people to experience togetherness between *here* and *there*—then they will miss the tactile sharing of the board and the pieces.

The plan is to develop, in 2010, some mini-games, small tactile elements to be played during the game, on both locations, in order to provide some tactile experiences to the players.

- Position the application as a platform, as a console, rather than as a stand-alone application. Many other games can be played on this TA2 platform. The platform is different from current platforms or consoles, because it uses a multi-touch, multi-user table and tactile elements—which is different from, e.g. Nintendo Wii or Microsoft Xbox.
- Maybe each game on the platform could come with a short (1-2 min.) introduction of the author of the game, in which he or she explains the game in brief. A more lengthy tutorial or manual can be implemented relatively easily in each game. Also, because the ‘moves’ are calculated by the application, it automatically allows players to only perform ‘legal moves’ and does not allow them to make ‘illegal moves’.

#### *About the evaluation and evaluations in 2010*

The focus group was conducted together with ‘board game fanatics’, who appreciate and enjoy the intimate and nuanced interactions between the players: the game being played *over* the table, between the players, in addition to the game being played *on* the table, the board game itself.

For next evaluations, we can go back to *Spelgroep Phoenix*, the ‘board game fanatics’ and ask them to evaluate a further developed demonstrator. In the meantime, they have the opportunity to learn to play the game *Space Alert*, so that, in a next focus group, they can better evaluate the added value of the elements that TA2 intends to add to that game.

In addition, an online version of Space Explorers will be developed. It can be interesting to evaluate that demonstrator with a slightly different target group, e.g., people who enjoy playing computer games, rather than, or in addition to playing board games.

## **4.5 MyVideos**

MyVideos is a set of tools and a secure infrastructure that people can use to combine different people’s video clips and edit their own video compilation. For example, at a school concert, parents can record videos of that event and upload their videos to a database. They can determine who can do what to which video, in order to secure their and their children’s privacy. Using their own and other people’s videos, they can create different versions of the event (‘narratives’). The editing tools are easy-to-use and people can choose for semi-automatic, semi-manual editing or a mixture of automatic and manual. Others, for example, people who were not at the event or who live abroad, can watch the video online, so that they can experience the event and experience togetherness.



**Figure 13 MyVideos**

#### **4.5.1 Research goals**

1. To gain insight into how parents create and share videos now
2. To get initial responses to the overall MyVideos concept

This would help collect some initial findings to inform the next design stage which involved refining the user flow, and the wireframes for the prototype.

Our first goal was centred around a series of short questions about what parents filmed, why they filmed what they did, and how they filmed it both technically and creatively. We also asked them to reflect on how they reviewed and shared their videos. We hoped to learn about the barriers to making videos, which could be technical or social, as well as the positive aspects.

Our second goal was to capture overall reactions to the scenario, followed up with a more detailed discussion about their concerns or perceived benefits of the application itself. This included asking whether the parents liked or disliked the scenario, whether they thought it was realistic, and which elements they would support (or not). We also asked if there were other things they would like to do with the application outside of the current scenario.

#### **4.5.2 Evaluation method(s)**

We chose to conduct a focus group of approx. 1,5 hours for this evaluation. It was held at BT's research and development site at Adastral Park, Ipswich after work hours. This was a preliminary focus group, held locally to the BT designer assigned to the project, which involved parents of children who play instruments in school concerts. Three parents took part (from different families) who work or have worked for BT. When considering their feedback we should consider them technical experts.

The parents were invited to take part in the focus group because they had children who played in a local school orchestra and/or had some experience with making family videos. They were recruited via a member of the TA2 team who knows the participants through work and school contacts. They are outside of the TA2 team and the concepts described to them in the focus group are new to them.

Because the parents work or have worked for BT recently, they should be considered professionals with a high level of technology expertise and a high awareness of telecommunications services. A further focus group is intended to take place in Amsterdam with parents who will be involved in testing the actual software at a later date.

Participants signed a consent form agreeing to the use of their contributions in this report.



Firstly, the parents were introduced to the goals of the focus group. The moderator asked questions in relation to their use of video in their family.

Secondly, the parents were introduced to the My Videos scenario, using a 5 minute video. The moderator asked questions to gauge their responses to the scenario.

This video ('MyVideosTromboneStoryboard-Voiceover.wmv') is a visual presentation that introduces MyVideos in the context of recording a school orchestral event. It describes how multiple families may record their own personal videos, as well as the school making a master recording of the complete event. A top level process is described in which parents upload their videos to a 'shared memory' resource and set permissions for the use of their video clips, which can then be tagged with their comments. A lightweight technical description is provided of how parents' clips might align to the master school track automatically, followed by certain key elements being identified automatically (e.g. people). The video then introduces the concept of narrative templates which can be manually populated with video clips. The parents can then select specific playback controls for the resulting narrative. The videos can then be shared with specific people on a number of devices (tv, mobile, web). The user interface components and user flow which appear in the video are for illustration purposes only. The evaluation questions relate to the general ideas proposed within the scenario and were not intended to illicit any feedback on graphical user interface designs at this stage.

In both sessions parents were free to raise their own questions and points, which meant some variation from the focus group template.

### **4.5.3 Evaluation findings**

#### Session 1: background, history of video making, motivation and barriers.

##### 1. Motivation

A strong motivation for making videos was to film the children as they grow up. However it was noted that as the children got older, filming declined. This was partly due to the fact that they were 'less photogenic' but there was some discussion that indicated the relationships had changed. One father was now more likely to film again because his son had reached 18 and was now in a rock band. He felt there was something new to capture.

##### 2. Technology Issues

There were some concerns based on experience with past technology. The drop off of filming has meant that two parents had not kept up to date with video technology, and their perceived problems were due to the obtrusive nature of old cameras and equipment, complexity of use and difficulty editing. There were concerns about the time an effort needed to get equipment together, for example. These parents did not want to spend a lot of time editing content.

The father who has the youngest child - and perhaps still in the period where he wants to capture his son growing up, uses digital video equipment, including pc editing and had none of the same concerns.

All the parents talked about how young people use mobile phones, and film lots of things, all the time. This led them to the discussion that more discrete, easy to use devices could persuade them to try again. This would be potentially less obtrusive and make them feel less self conscious.

##### 3. Social Etiquette

Linked partially to the issues related to older technology was the concern that it was not socially acceptable to be standing around filming at orchestral events. It might be seen as rude or disturbing. This was the case for the reticent parents. Filming was much more acceptable at the youngest child's school, where parents come prepared to film and find good positions to do so in advance. Again it could be construed that this is a new generation of parents using digital equipment.

##### 4. Sharing videos



The enthusiastic parent regularly made DVDs of his young son growing up and sent them to relatives twice a year. His relatives live in remote locations outside of the UK and are not online. It was important that he could send physical media.

Sharing with family and friends was preferable to sharing with anyone on 'Youtube' with this group. But it was noted that some of the family videos had not been looked at for years, and in one case some family videos had only been looked at because the daughter was now a teenager and it would be fun to look back at her at 6 or 7. This was a shared family experience with her friends of a similar age.

#### 5. Subject Matter

All the parents had made films at school or family events over the years. Plays, sports days, parties and films as special family presents. However one parent made an interesting point about needing to be present at the events and not experiencing them 'through a lens'. His personal memories were more important to him than trying to capture something which may not look as good or feel the same as he remembered.

Filming a school orchestra was not a very compelling idea to this group, with the parents saying they may buy professional recordings which have photos linked to them, but wouldn't want an hour and a half of video of the event. Family members are often obscured, they sit in the same place, for example.

#### 6. Techniques

There was some variety in the types of shots the parent have tried to do. At one time they may have recorded a whole play, but more often they tend to record clips of the bits that feature their own children. Only one parent mentioned framing shots and taking care about the quality of the output, and he was the only parent experienced with editing videos - which seemed like a daunting prospect to the others.

#### Session 2: Scenario and application feedback

As described above, parents in this focus group had a luke warm reaction to the idea of filming a whole school orchestra event. However, following the video presentation, the parents began to discuss a number of benefits they thought the proposed application could bring to this particular subject.

#### *Positive feedback*

The parents felt a master track with automatic synching would be very beneficial if it worked well. There was potential for including clips they may miss, and getting different viewpoints on the event. People who didn't film anything could still potentially make a video from the event and benefit from the application. Interactivity and different narrative styles were also appealing. It had the potential to be quick and easy to use which was very important. One parent cited 10 minutes as the amount of time they were prepared to allocate to editing.

#### *Concerns*

They expressed concerns about the varied quality of videos, mixing a master track, which they assumed to be of high quality, with potentially poor video. They were not sure why you would want to mix the two up. Because some people might not film, they were worried there would not be enough content. They wanted their video choices to be predictable, so in the case of using narrative templates, if they previewed a narrative they would want their relative to see exactly what they had selected.

Although they would like to try this out, there was the caveat they might like to buy professional in the end.

#### *Application feedback*

The parents brainstormed some features they would like to have in this application. These included:

- Annotation over the video – pointing things out, titles



- Include still photos
- Different styles and formats
- Options to download and save a version locally
- Picture in picture for context

Features they were not sure about, or would need more clarification about how they worked were:

- Don't want labels on children for others to see on the video
- Want comments to be private
- Want to weed out the rubbish video
- Recognition for own use only
- Not sure about searching for individual children

#### *Issues raised by the parents*

The parents raised their own concerns about copyright and consent in this discussion.

#### Copyright

It was not clear who owned copyright to the video, the performance, and the music in this scenario. It was identified in the discussion that this was not just an issue for parents, it was also an issue for the school, the orchestra, and even the council if this is a bigger orchestral event.

The parents felt there was a set of roles in this application: a 'service provider' who provided the tools and the MyVideos service, a 'host' who ran the event and was the owner of the master track – in this case this would be the school, and then the participants ( the parents).

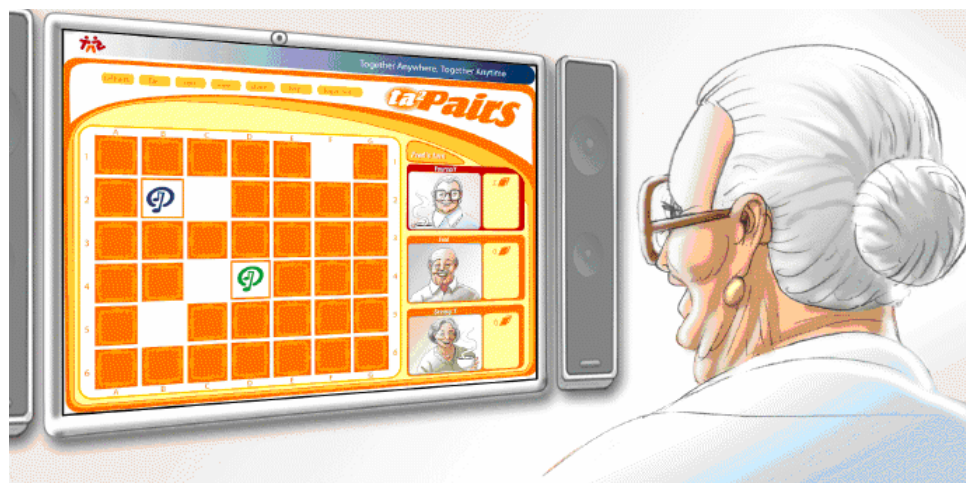
They felt that the service provider should give proper options for the host to administrate the shared space. The parents wanted to feel that the host could benefit from the content they provided and they would give permissions to the host. They were not happy to give copyright options to the service provider and were wary that it could be seen as a means to get cheap content, and reuse the content out of context. They felt that the school could make money from selling some videos if they wanted, but they also wanted a closed user group for verified parents using the application.

#### Consent

This group of parents felt they would give consent for the use of their videos by other parents. However they all said there is always an awkward parent who doesn't give permission – and this could be tricky given the layout of orchestras!

## **4.6 Sixth Age**

Sixth Age is a series of 'casual games' to be played both for the game play as such and for the social communication before, during and after the game. For example, elderly people can play a game of 'Pairs' with other elderly people or their grandchildren, while they are at different locations, and chat with each other via a video communication link. The system consists of easy-to-use equipment such as touch screens, and can be provided in nursing homes, so that personnel may help with using the system. In order to facilitate conversations and storytelling, people can create their own decks of cards, using their personal photographs; there is an easy-to-use application for uploading personal content. Togetherness is encouraged between elderly and others.



**Figure 14 Sixth Age**

The first Sixth Age game we have developed is called Pairs, and it is based on the well-known Memory card game. Since the Pairs demonstrator was planned to be the first to be finished for a real user trial, we did not plan as detailed focus groups of the game concept as for the other demonstrators. The “real” Pairs game has been somewhat delayed due to priority changes within TA2 (and thus the “real” user trials) but early on we developed a web-based mockup of the game. This prototype was used in the early evaluations described below.

The initial evaluations within Sixth age have focused on understanding the target group of elderly people and particular issues associated with that group. In addition, we also wanted to investigate how elderly people felt about TA2-like communication in general, rather than merely focusing on the Pairs game.

#### **4.6.1 Research questions**

The main research questions addressed thus far within the Sixth Age evaluations are:

1. To what extent do elderly people understand the concept of TA2, and what do they think about it?
2. What are their opinions towards games in general, and in games played in social contexts in particular?
3. What are their opinions towards new technology and computers? To what extent do they use computers and for what purposes?
4. What do they think about the TA2 Pairs game, as a concept?
5. Would they be interested in using TA2-like systems and games to keep in touch with others from their own age group?
6. Would they be interested in using TA2-like systems and games to keep in touch with others outside their own age group, in particular younger family members?
7. Explore usability and accessibility issues of particular concern for elderly people.

#### **4.6.2 Evaluation sites and methods**

Initial evaluations within Sixth Age have occurred in several places. Methods employed in these visits were primarily observations (direct and participant) and informal interviews, both in group settings and with individuals, as well as a focus group session.

In May 2009, we visited two different centers related to elderly care in Södertälje, Sweden. The first, Åsen, is a daily activity center for elderly people who are not suffering from dementia. Åsen is run by the local municipality, and it has its own staff working with elderly care. Elderly people who are



enrolled in some kind of support program can participate in various joint activities at Åsen, such as baking, playing, singing, doing gymnastics, etc. There is a fairly high demand and people have to book certain activities in advance. We visited Åsen during four hours and participated in various activities, such as a quiz walk outdoors, baking cookies and having coffee together. We introduced TA2 in general terms to the whole group and explained what we want to achieve and why. Then we had an informal discussion in a group setting as well as with individuals about TA2 and Pairs. About 25 elderly people participated in our discussions.

We also visited Lunaträffen in central Södertälje during three hours. Lunaträffen is another type of daily activity center for elderly people that is financially supported by the municipality, but all activities are planned and carried out by elderly people themselves. There is a café, workshops for wood and textiles, a computer room, an art atelier, rooms for playing games, etc. While many activities are scheduled, everyone is welcome to come and go as they please and there are no direct costs for participating in the activities, other than for materials and consumables. The kind of people who come here are typically elderly people with good health, wanting to engage in social life, receive intellectual stimuli, and engage in games, art or craft together with others. There were about 20 people at Lunaträffen when we visited them.

In July 2009, we visited the Bradbury Centre in North Tyneside, UK, associated with the “Connected Borough” initiative. The vision is to explore and develop new community services for all citizens utilizing broadband and connectivity, thus trying to address the “digital divide”. We arranged a focus group session with a group of five seniors, addressing general issues related to TA2 as well as trying out a mock-up of the Pairs game. This was followed by subsequent discussion and reflection on these issues. To facilitate and illustrate the game play we brought some props: a large picture frame and two laptops running a web mockup of the Pairs game.

In November 2009, we visited Mötesplatsen Centrum in Göteborg, Sweden, at several occasions. The intention was to get further insight into the everyday practices of elderly people, as well as to recruit elderly volunteers for participating in upcoming user trials. Mötesplatsen Centrum is run and financed by the elderly care section at the local municipality in Göteborg, and there is permanent staff available (known as elderly pedagogues). The center has free admission and is open to all citizens in Göteborg, however, mostly elderly people come there. Similar to Lunaträffen in Södertälje, the events taking place are mainly planned and organized by the elderly people themselves, with support from the local staff. These events typically address social, cultural and intellectual needs of the elderly citizens. Examples include literature and art seminars, singing, dancing, playing games, baking, computer training and doing excursions together to interesting places. It is also possible to explore various kinds of assistive tools and technologies that the municipality can support the elderly people with, but there is no regular health care service available here. The basic philosophy is that the center should help to facilitate, rather than direct, the activities. The elderly people themselves should be active participants in all stages of the joint activities, rather than being more or less passive consumers. We visited the center at several occasions when there were different kinds of activities taking place. Participation is voluntary and we wanted to get a fairly wide diversity among our test recruits, thus we attended several different kinds of activities.

At one occasion, there was a literary seminar where a 93-year old writer talked about her book and her long life reflected in it. The seminar was visited by about 25 elderly people. After the main seminar was over we introduced ourselves to the people there and explained the overarching ambitions of TA2, and why we had come to visit them. We had an informal group discussion about these issues for some 20 minutes and then subsequent one-on-one discussions with some of the elderly people there. A few days later, we participated in a social game session with 12 elderly people, playing the board game “who wants to be a millionaire?” Before we started playing, we briefly introduced ourselves, TA2, and explained why we were there. Then we participated in the game session, which took about 90 minutes. After finishing the game, we had an open discussion about TA2 in general, and about sociability and playing games together. We also visited an art seminar where the participants take turns in presenting



to each other with subsequent discussions, as well as a session where elderly people learn how to use computers from other fellow seniors.

At each occasion, we very briefly introduced ourselves at the beginning of the session, and then participated in the event together with the other people there. After the main event was over, or at some other convenient time, we would explain further about ourselves, about TA2 and why we were visiting them. After discussions and explanations we asked whether some of them would be interested in participating in subsequent design workshops and user trials. As expected, not all were interested in this but some thought this was an interesting idea and they volunteered to be available for future TA2 activities. All in all, we have now recruited 20 elderly people who have expressed interest in participating in future TA2 activities.

### **4.6.3 Evaluation findings and reflections**

At first, the concept of TA2-like communications seemed difficult to grasp for many of the elderly people we met. We had to explain and discuss it for a while, both referring to abstract theoretical concepts and real-life analogies such as celebrating holidays together before most people seemed to understand the basic ideas behind TA2. Some people seemed to be happy with whatever means they had access to (mainly telephone and physical gatherings) for keeping up their social relationships with friends and family. While they showed interested in our research agenda, they were not too eager to try out new technical solutions to social problems, unless they could clearly see a benefit with it. Two people had quite recently acquired computers, primarily to be able to communicate with their children living far off. They were using email and Skype in addition to phone calls.

Many of the seniors had fairly little experience with computers, but of course they were familiar with telephones and other communication technologies. They confirmed our proposition that telephones are primarily good for keeping up with individuals, and that shared group activities like the ones they participated in at the care and activity centers brought additional value in terms of sociability and communication in a group setting that could not easily be replaced by one-on-one communication technologies like telephones.

Most elderly people we met were quite fond of games of various kinds, and they regularly played card and board games as well quizzes together, at least when meeting with other elderly people at the care and activity centers. They seemed quite happy with our approach in trying to enhance sociability using games as an “excuse” to doing something together. A few, but not all, liked the idea of being able to play and chat with remote friends in a social setting, using a system like TA2. However, if they had the possibility to meet physically they would still prefer this option.

As for the actual Pairs game, we also got some interesting comments and challenges. We tried to be clear about that the game as such was less important, rather it was the underlying issues related to togetherness that we were interested in, but perhaps we did not always succeed. There are a few good quotes that emphasize TA2 thinking; there are also some negative comments which are just as valid. The game and playing it received mixed success with some people getting very hung up on it being just a simple game - “why would I ever want to play that sort of thing?” - up to the very positive “my wife would give her right arm to be able to play that sort of thing with the grandchildren!”

At one occasion, we noted that whilst we only took with us a clear frame, (effectively a large picture frame to simulate people looking 'through' a display to another location, everyone playing the game was focused almost entirely on the game screen and didn't look up at their opponent at all. This points in the direction of usability and accessibility; an important area to address for the upcoming user trials.

The elderly people we met were not socially isolated, and while they could appreciate the ideas behind TA2, they were not very interested in replacing their current ways of meeting others in their own peer and age group with TA2 (which of course was never our intention either). Some of them could see benefit in using TA2 as a complement to how things were now. However, when we talked about trying



to foster relationships across generations, we got all ears. Most of the seniors had children and grandchildren, and they were very interested in having more frequent and deep social contact with the younger generations. Any technology that could help with that would be seen not as a replacement of the existing structures but as a possibility for improvement. This made us more confident that we ought to explore the cross-generational issues further.

There were also some more general remarks referring to togetherness and whether we could actually achieve our goals with the current TA2 setup. For example, one man questioned the single view on a large TV set, showing video streams from one or more remote places as being sufficient for our purposes. According to him, a central part of a social experience, as the ones we are seeking to create in TA2, is being able to effortlessly shift one's attention at will. At times, one's focus will be on the common activity, such as a game. But then you exchange a few glances with somebody else, without disturbing the rest of the party. You might take a break and divide into smaller sub-groups for a moment, while still being seated around the table in the same way, and these constellations could easily adapt and change over time. Then you would continue playing, disregarding the pause. While this comment clearly shows an insight into both what we are trying to build technically and what kinds of social and experiential challenges we are facing, it also points to a limitation of the technology. While we can build a system that can relay the game-playing activity between different households, and also allow for audio and video communication in real-time between the participants, it is more difficult to simultaneously allow for exchange of the same kind of glances, gestures and directing one's speech only to one person for a moment – between arbitrary pairs and sub-groups of the both co-present and remote participants involved in a game.

There was a huge difference in age, interest and capabilities among the different elderly people we met. Since we only visited care and activity centers for people who voluntarily came there, and who did not have dementia, we probably missed out parts of the elderly community. It is possible that people with greater disabilities of various sorts, the ones who for one reason or another can't or won't participate in these kinds of common social activities, suffers even more from social isolation and thus would be able to benefit even more from a TA2-like system. Thus, further effort will be placed on the less-healthy seniors in future work within Sixth Age. However, during the co-design workshops we will work primarily with healthy and active seniors.



## 5 Conclusions

In the TA2 project, we have combined, and will continue to combine, theoretical approaches and practical approaches in order to better understand what togetherness is, how people relate to it and might use technology to support it. There have been major societal and technical changes, affecting how we live and communicate with each other in everyday life. Society has become more individualistic, and while we have numerous ways of communicating with others, we tend to do that mainly as individuals. According to theories about basic human behavior, such as social identity theory and interaction ritual theory, we need individual as well as group-related relationships to thrive in life. While the recent trend of social media is partly addressing this basic need, it mainly focuses on our outer social network, our weak ties. Based on such theoretical considerations, empirical studies, as well as our own investigations, there seems to be an opportunity to support being together as a group across distance which is not sufficiently explored today.

We do this to be able to create ICT applications that facilitate people to experience togetherness, whilst still apart physically.

The main research questions which we address in this report are:

1. How can we understand togetherness *theoretically*? (chapter 2)
2. How can we *evaluate and measure* togetherness? (chapter 3)
3. What can we learn about togetherness *in practice*? (chapter 4)

### 5.1 Theory

We proposed to understand togetherness in terms of *strong ties*, that is, as people's experiences of relatively intimate relationships with others. We focus on togetherness within and between groups of people, and we specifically focus on togetherness within and between families.

In sociological terms, we propose that people experience togetherness *physically as well as psychologically* and that togetherness as an experience can be viewed as existing simultaneously at different levels (during interaction and in everyday life).

Furthermore, we (further) developed a 'UX framework': a User eXperience framework that relates *design elements* (those elements in products or services that designers can manipulate) to people's *experiences* and to people's *values*. This framework can be used for evaluation (starting with people's experiences and evaluating how these are influenced by the design and by specific design elements) as well as for design (starting with design elements and trying to influence people's experiences when they use the design).

We also proposed a model to make designer's (intended) values and user's (experienced) values explicit; this model is intended to better understand how designers put specific values into the product or service and how people experience the product or service in relation to their (aspired) values.

### 5.2 Methods

The demonstrators are currently being developed, so we presented and discussed the demonstrators as early or paper prototypes. This approach of involving (potential, future) users early on during research and design, and during the project's iterations is according to human-centered design principles.

Furthermore, we developed a questionnaire to evaluate and measure people's experiences of togetherness. This questionnaire was piloted with a large population (n=149), in order to test its validity and reliability. Moreover, we developed an innovative approach to summarize, visualize and



communicate information about a target group, Familias, as an extension to creating and using Personas in the design process.

### 5.3 Evaluations

We conducted interviews with families to explore how they (currently) experience togetherness and how they use ICT as tools to create or experience togetherness. In these interviews, we also explored their first reactions to several of the demonstrators that are being developed within TA2.

We evaluated these demonstrators in more detail and more systematically in focus groups with different relevant user groups. We conducted approx. two focus groups with each four people, for each of the demonstrators. In these focus groups we explored how people currently experience togetherness and whether and how they use ICT for that, and also explored how people evaluate the TA2 demonstrators. All demonstrators are envisioned to be used on a television screen, with an Internet connection, and in the living room.

Overall, people recognized and appreciated the ‘group-to-group’ communication and the rich, natural way of communicating via video and audio. This is good news for the project, since these are the two key elements of the project.

- Connected Lobby: People identified privacy as a key issue for this demonstrator (what is visible and for whom?). We learned from their discussion that we need to approach privacy as a complex, subtle and dynamic issue and that we need to ‘do it right’ from the beginning;
- Child’s Play: Teenagers first compared it to MSN and Skype and later understood its added value: it facilitates communication and cooperation between groups (instead of between individuals); it allows people to interact ‘naturally’ (instead of via text); and it facilitates all kinds of shared activities, such as doing homework (instead of watching television passively).
- Space Explorers: People appreciated the idea of allowing people to jointly play a board game while they are at different locations. They remarked that an important part of playing happens *not* on the table (the board game itself) but happens *over* the table (between the players) and asked whether the application would allow such subtle ways of communication.
- MyVideos: People appreciated the tools to create and edit videos, especially its functionality to automatically put pieces of video in the correct order (based on audio synchronization). They also asked questions about owning and sharing the video material (who can access, who can edit, who can use it?)
- Sixth Age: Many elderly people were reluctant to get new technology, unless they could see a very clear benefit from it. While they recognized playing with their own friends as a possible scenario, they were particularly interested in a system that would ease communication with their younger siblings, across generations.

### 5.4 Next steps

Based on the insights developed we propose next steps for the project.

In 2009 we focused on theoretical approaches and conducted exploratory empirical research. In 2010 we plan to focus on the practical approaches and on empirical research, so that we can validate our theoretical findings.

Furthermore, the concepts from sociology (*strong ties, interaction ritual, social identity, social cohesion*) can be mapped relatively easy in what people say during the evaluations (focus groups).



This is a support for our ambition to constructively combine theoretical and practical approaches, and we will continue with that.

Moreover, the relevant project team members (i.e. those responsible for developing the ideas for the concepts and for building the technology that makes them work) found the results from the focus groups useful, informative and inspiring for further development. This is a support of the human-centered design approach, and we will continue to involve users during research and design.

In this report, we explored different forms of togetherness. Roughly speaking, we can distinguish a form of togetherness that is about synchronous communication and doing something together real-time; and a form of togetherness that is (also) about asynchronous communication and about the time in-between joint activities. This first form of togetherness (synchronous) is demonstrated in Jump Style, in Space Explorers and in Sixth Age; in these applications people engage in shared activity or jointly play a game. The second form of togetherness (asynchronous) is demonstrated in Connected Lobby and MyVideos; Connected Lobby is about facilitating feelings of togetherness (presence, awareness) in-between shared activities, and MyVideos facilitates people to relive an event as if they had been there.

In 2010, we plan to focus less on the various, specific demonstrators, and focus more on the shared capabilities of the various TA2 demonstrators. Examples of capabilities are ‘high quality video conferencing’ or ‘spatial audio’. Focusing on the capabilities will help us to make stronger relations between work packages of the TA2 project. We hope that a focus on capabilities will help to relate the work that is being done with a focus *technology* (developing the capabilities) with the work that focuses on *user experience* (evaluating how a specific capability can help people to experience togetherness), and the work that focuses on market and business aspects (assessing the value of a specific capability, in the market and for customers).

Concerning the work that focuses on user experience, we plan to conduct more systematic evaluations, e.g. conduct lab experiments in which we experiment with design elements (capabilities) and see how these influence people’s experiences.

We also aim to create a design process that links higher order goals or values such as the experience of togetherness with human values (user and designer values) on the one hand and more concrete user experiences and their implementation on the other hand based on the above two points. In 2009 we developed a framework for togetherness and for user experience; in 2010 we plan to use that framework, for example to guide the design process.



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