



D10.1 – Complementary document: Guidelines for companion design

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1 Introduction

In D10.1, SICS promised to submit a complementary document that would present further details about the guidelines for companion design that were introduced in the deliverable. The guidelines were generated based on the several preparatory studies and activities that were conducted in Task 10.1.1. The main purpose of providing a complementary document is to hopefully make the guidelines easier to pick up and apply, primarily by the partners who are responsible for the development of the different show cases/scenarios in LIREC. However, we also think this text is relevant to all partners in the project.

As LIREC is a highly interdisciplinary project where the different partners have their particular areas of interest, we feel it is important to point out that this document is written from our (SICS') perspective coming from user-centred design in human-computer interaction (HCI).

In the following document, we will begin with a general introduction concerning all three showcases to how we think the *written* scenarios could be developed further by taking a user-centred perspective. In essence, this means taking a *stronger focus on users* in the written scenarios, which we believe will not only improve the richness of the scenarios but also make it easier for the developers in LIREC to reflect upon their designs and communicate their ideas to other stakeholders. Thereafter, we will bring up each of the current showcases/scenarios in LIREC and discuss how the guidelines suggested in D10.1 could be incorporated into that particular scenario.

2 Working with scenarios in design

Before discussing the current showcases/scenarios in LIREC, we would like to touch upon the use of written scenarios in design of technology in general, and especially in the area of user-centred design.

Scenarios are a well-established method in both industry and design-oriented research to communicate an interactive setting or situation of some kind. As will be explained further below, scenarios should be detailed and rich in information in order to provide a ‘vivid’ description of a design – importantly, this will often also lead to making the design more thorough and well-planned. Despite their level of detail, scenarios are still flexible and possible to change or re-write at any time. It is crucial to keep in mind that it is much easier to re-write a scenario, than to re-build an entire interactive system later on in the design process.

In the design of advanced interactive technology, the use of *scenarios* can be valuable at many stages of the development process, for instance to illustrate users’ needs, goals and actions in the beginning, or to evaluate system functionality at the end of the design process (Carroll 2000). A scenario is a *written story* describing the future use of a system. It has the traditional elements of a story: an actor (e.g. a system user), a setting (e.g. a hotel), a system/tool/object (e.g. a booking system) and goals (e.g. booking a guest) with sub goals (e.g. printing the booking). The actor in the scenario is sometimes referred to as a *persona* – a made-up user or one that is generated based on results from e.g. market research. A scenario should thus provide a *rich description* of the user and what he/she wants to do using the future system in a particular situation. Using the example of the hotel setting, the beginning of such a scenario could look something like this:

“Lena has been working at Hotel Svea in Stockholm for two weeks. She really enjoys her new job at this busy hotel but is exhausted from taking in all the new information and learning how to manage her tasks. This afternoon, her supervisor and mentor receives an urgent personal phone call, leaving Lena all alone in the hotel reception for the first time. During this time, a family arrives and Lena has to manage the booking all by herself. The family has forgotten to ask for a spare bed, which Lena now has to include in the booking...”

Scenarios like this one can be developed by involving users to write their own stories, by conducting observations or interviews with people using an existing system, or having the designers themselves to come up with scenarios. Reasons for developing and using such written scenarios are that they could help developers reflect on their system; allow for multiple perspectives on usage/goals/solutions/intended users/etc.; they are concrete but at the same time flexible; and they make it easier to communicate with other stakeholders (Carroll 2006). Essentially, scenarios from a user-centred perspective aim to give a rich understanding – a picture – of what it could be like to use a system based on different goals, and to be the user of the system.

3 Scenarios in LIREC

The scenarios in LIREC are currently described in terms of tasks, competence, and technical as well as social measurements. In order to better understand the respective potential of the different scenarios, more information about how users and robots are meant to interact would be useful.

We are aware that the scenarios in LIREC are still under development, and that it is not yet clear what technology or solutions will be used in the actual building phase. In the beginning of a design phase, this is not a problem. Moreover, the research teams in Bamberg and EOTETO aim to contribute with knowledge about human motivations, and it is natural that the scenarios do not contain much information about those motivations at this current state of the project. However, while waiting for such results it is still possible to generate scenarios including potential users. Without a person in the scenario, it can be difficult to understand the real use qualities of the companion.

In their present forms, the scenarios in LIREC are dominantly robot/companion-centred. Our concern is the lack of users in the written scenarios. Who are the intended users? What do we believe are their goals and motivations for interacting and communicating with the systems that we are going to develop? For example, it is talked about how a robot should be able to interpret a user, but an equally important question to explore – if not more important – may be *how users would interpret the robots*. If LIREC is aiming for successfully designing technology to be used in social situations together with people, then we believe that these people should be an integrated part of the design from the very beginning.

In the deliverable D10.1, we listed a number of preliminary guidelines based on the preparatory study outcomes on ethics and user-centred design performed during the first project phase. Here, we have attempted to apply these guidelines more concretely to the

preliminary showcases/scenarios developed by our partners (UH, HW and INESC-ID), as a set of questions posed from a perspective of users. This is partly to promote a more user-centred perspective across LIREC, and also to highlight dimensions that we think could be discussed further in the written scenarios. We believe that our partners already have the answers to many of the questions below, but as already discussed, we would like to see an elaboration on them in the written scenarios and in the designs.

For each of the showcase scenarios, the reflections are grouped around four themes, based loosely on the guidelines discussed in D10.1:

1. **What is the context of use? Who are the users?** This is important in order to get a sense of how the system may fit into an existing practice and environment, with the tools that people already use, etc.
2. **How would a user interact with the system?** Here we ask for a description of the interaction, from the perspective of *users*. What modalities do they use to interact with the companion? How does the system react to the actions that users perform? Can the user personalise the companion in some way?
3. **How would several people interact with and through the system?** How may the robot be used in a larger social context? What is the current social context? Is there a larger audience or potential users besides the intended users? May the companion be used as a social mediator?
4. **What ethics issues are involved?** Are there any health and safety issues involved? Are there privacy concerns with recording, storing and using personal data, etc? Are there any environmental, cultural, or social policy issues that people could react negatively on?

3.1 The “MyFriend” showcase

3.1.1 The “My Friend” and “Our Friend” scenarios

What is the context of use? Who are the users?

Both the “My Friend” and “Our Friend” scenarios are intended for and tested in an educational and social context for children, currently a chess club. As a designer for this setting it may be relevant to know some more detail, e.g. are the children doing other activities at the club except for playing chess? Are the children watching each other’s games, or are they focusing primarily on playing? Why are they playing at the chess club?

How would a user interact with the system?

To fully understand the design, it would be useful with a more concrete description of the actual interaction. Which modalities may be used to interact with the system? What is the user expected to do at different points in the interaction? How does the iCat respond to different actions?

Based on visual appearance and actions performed by the iCat platform, combined with ideas derived from comics, cartoons, fiction etc, what ideas do children bring to the setting,

and how does that affect the interaction? What do children expect the iCat to (be able to) do? How are the capabilities of the robot manifested in the design?

In the scenario description, the iCat is able to recognise individuals to develop a more personal mode of interaction. Are there any other ways of making the interaction more personal? Is there any ways for the users to actively personalise their interaction with the iCat? The system is designed as an educational platform with which children may improve their skills at playing chess, but is there any way for the children to train or teach the iCat?

How would several people interact with and through the system?

All technology is based in an existing social setting, so even if the MyFriend scenario is intended for one user at a time, it is still relevant to observe and think about the bigger social context in which the scenarios are taking place. Are there for instance any spectators watching the game, and if so, how may they affect the game play? Could iCat become a social mediator between children at the club? How do multiple children interact with or around the robot? May a teacher be able to interact with the children via the robot?

What ethics issues are involved?

The ethical issues involved in the context of “My Friend” and “Our Friend” are very much based on the particular context of the scenario. How are the children usually socializing at the chess club? Are they aware of each other’s results from playing, level of skill, and so on? How do the “My Friend” and “Our Friend” companions fit into this context? Would such companions affect how the children socialize with each other? For example, do children think it is ok if the iCat declares the results from a game out loud (when other children can hear), or is that violating on their sense of integrity? It might be worth observing not only the child playing, but also the bigger context of other children in which the game is taking place. Regarding “Our Friend”, what ethical issues related to social dynamics and friendships among children are involved in having a robot taking sides in a game?

In terms of dimensions of privacy and data security, does the robot record any data from the users? Do users feel as if the robot record data? (note that policies around these issues may be especially sensitive when recording children)

3.1.2 The “Welcome to the jungle” scenario

What is the context of use? Who are the users?

In the “Welcome to the jungle” scenario, it is unclear in what context the scenario is intended for. Is this setup intended for schools/museums/after school clubs or for homes? Is it meant for one child a time or several? Could it be used with several Pleos or similar robots? What about other toys? Depending on the physical and social setting, this scenario could be understood in many different ways.

How would a user interact with the system?

The concept is currently outlined in a very preliminary manner, but it seems to suggest an environment where children interact and play with a given set of animals inhabiting the space. Are there ways of personalising the characters in the system, e.g. by programming/designing their behaviour and/or appearance?

What are the relationships between onscreen characters, Pleos, and handheld devices?
What is the role of the robots in this setting?

How would several people interact with and through the system?

How could several children play with the system at the same time? Would they use a Pleo each, or would it be possible to collaboratively take care of one Pleo?

For a setting like this, concrete issues of maintenance may become an issue to consider early on in the design. As seen in SICS' study of Pleo, it was the parents who had to maintain the robot, as the children were too young *and* the matter of maintaining Pleo was surprisingly complex. One of the biggest problems in the Pleo study was battery lifetime, which makes it a relevant question to ask how battery life would fit into the image of Pleo as a companion that needs care? From a battery perspective, Pleo "dies" every two hours or even more often. However, we think this could be designed for in a much better way: Pleo's (or some other similar robot) battery life time could be integrated into the interaction with Pleo, so that taking care of Pleo means caring for battery lifetime also. Both the projection wall and the handheld device bring up similar challenges of who would maintain them.

What ethics issues are involved?

While the multi-projection wall obviously offers interesting opportunities because of its technical complexity, we would like to bring up the question of sustainability both in terms of environment and resources. Again, this differs if the setup was to be used at home or in a school, but what are the clear benefits of using such a complex piece of equipment?

3.2 The "Robot House" showcase

3.2.1 The "Fetch and Carry" scenario

What is the context of use? Who are the users?

As a system aiming to be used in people's everyday homes, it is relevant to explore how the scenario may be made to fit into existing practices and resources available in that particular environment. Examples include not only the tasks that users need help with, but also the kinds of equipment that the intended users use today, and how these may be used in conjunction with the new companion system.

When designing for individuals with mobility impairments, it may for instance involve slightly different challenges if the users are using an electrical or manual wheel chair, crutches, or a walking frame to move around in the house. It may be interesting to explore slightly different scenarios for users in such different kinds of conditions, and how these current tools may work together with the robotic system. Examples could be if and how the robot could be controlled from the existing panel on an electric wheel chair, or if a walking stick or crutch could be used as an interaction modality.

How would a user interact with the system?

When designing for people who may rely on the system for important parts of their everyday activity, it may be of special importance to make the system possible for them to

maintain and check without further assistance from others. One of the more basic aspects that a user may consider is how and how often does the robot need to be recharged or in other ways checked, and whether this is possible to do from e.g. a wheel chair, with limited manual force, etc.

The scenario mentions “human to robot teaching” and “adapting to personal preferences”, which essentially concerns the question of designing for appropriation/personalization. We see this as an excellent strategy for personalization, especially as teaching and training were aspects that came out as important qualities in EOTETO’s study on human-dog interactions. From our interpretation of the list of competences for this scenario, we assume that the training of the robot is here envisioned as primarily implicit (the robot should automatically learn to recognize personal preferences, keywords, etc). A potential extension, and as a way of tying back to the study of EOTETO, could be to explore how users may engage in more *explicit* training and teaching of the robot, as this seems to be a central activity emphasized in the study of dog owners.

Without using the terminology of programming or learning algorithms, it could also be relevant to explore simpler modes of personalizing the behaviour of the robot, e.g. to adjust certain settings, or to have different “themes” (change voice, appearance, colour, etc, as people do with mobile phones) to make it more personal.

Other aspects of appropriation and personalisation concern not the computational aspects, but may still be valued by users when entering the environment of people’s homes. Is it possible to decorate the surface appearance to fit better with one’s own clothing style, or to make it in line with the interior of a particular home environment?

What do people expect the robot to be able to do? How are the capabilities of the robot manifested in the design?

Based on the preliminary user studies in LIREC, it seems that people often have very particular ideas of what a “robot” or “robotic product” should be like. This scenario is intended to be based on the Charlie or Cosmos platforms, which (as with all of the LIREC technologies) are very particular manifestations that may only have loose resemblance to popular ideas of robots from fiction. A question may be whether these systems should be “marketed” to the users as “robots”/“robotic products” or if we should come up with particular naming of the platform, e.g. “a walking table”, as a way of limiting the expectations that users may bring with them.

How would several people interact with and through the system?

How may multiple users interact with or around the robot? Is it possible to communicate digitally through the robot, and how is that envisioned to be done?

What ethics issues are involved?

In terms of environmental issues, how much electrical power does the robot require? Is it possible to make the power consumption more efficient? Can the user switch off the robot when not in use, or does it need to stay in standby mode? Can the robot be used for anything when switched off (e.g. as table)? For how long is this robot thought to be working?

In terms of privacy, does the robot record any data from the users? Do users feel as if the robot record data?

On a more general note (brought up at the Hertfordshire meeting in June 2008), an interesting value perspective of this scenario is whether the user should be considered as an active user of the technology, or a passive person merely receiving help or assistance from the robot. It seems from earlier studies, that people prefer to be seen as active participants, a perspective that is present in the scenario, but that could potentially be made more explicit by sketching out the scenario in more detail. It is crucial to consider a person's integrity and space for doing things on his/her own initiative – regardless of involving human or robotic assistance.

3.2.2 The “Social Mediator” scenario

What is the context of use? Who are the users?

This scenario is also set in a home environment.

Who is the user? Where and in what situations can we find social mediators? In this scenario it is extremely useful to be more explicit of the particular stakeholders involved.

How does the robot fit into existing practices and resources available in the environment where it should be used? What kinds of equipment do the users use today (e.g. mobile phones for communication)? How may these be used in conjunction with the new companion? What does the proposed system add to current practices?

How and with what frequency does the social mediator need to be recharged or in other ways checked? What happens when technology breaks down? Who is going to take care of that?

How can one be sure that messages have been delivered to a person?

How would a user interact with the system?

How may people make the robot their own? Is it possible to decorate it to fit better with one's own clothing style, or the interior of a particular home environment? Is it possible or desirable to customize the behaviour of the robot?

Does this scenario involve pre-scripted ideas of what the robot should be used for, or could it involve staying open to multiple uses of the robot? For this purpose, it could be useful to list a range of activities that the social mediator may support, as a way of broadening the scenario and also as a way of addressing the complexity of human environments and activities.

It may appear as the users interact with the robot, while in fact they are directing themselves to other people through the robot.

How would several people interact with and through the system?

In nearly all the preparatory studies, the potential role of technology as a mediator between people in its social context was brought to the fore, which is also the primary concept of this scenario. We find this very appealing, especially for a home setting where one could assume that multiple users will in one way or the other interact with or around the same system.

The scenario could probably put more emphasis on how more exactly not only care taker/givers interact through the robot, but also how different family members may make use of the system in different ways. As a social mediator, the robot may not only be used for

communication between people over a distance, but also as co-located but temporally distributed, as well as in ordinary co-located social settings.

What ethics issues are involved?

What do people expect the robot to be able to do? How are the capabilities of the robot manifested in the design? A pet-dog can certainly be considered a social mediator; one that does not necessarily communicate using speech or even have anthropomorphic qualities. An important thread to explore in the scenario is thus to balance familiarity with expectations so that familiarity serves as a common ground for mediating.

In terms of privacy, is communication and data recorded? Can the users control what material is recorded and what is not? Do users feel as if the robot record data?

In terms of environmental issues, how much electrical power does the social mediator require? Is it possible to make the power consumption more efficient? Can the user switch off the robot when not in use, or does it need to stay in standby mode? Can the robot be used for anything when switched off? For how long is this robot thought to be working? What are the benefits or disadvantages of having sustainable interaction with the social mediator?

What are the values particular to this scenario? What is the origin of these values? Are there potential qualities of a social mediator that are socially or culturally sensitive?

3.3 The “Spirit of the building” showcase

3.3.1 The “TeamBuddy” scenario

What is the context of use? Who are the users?

The scenario contains a photograph of the office room, but this does not show much of the office equipment, activities or people that inhabit the space. As a system aiming to be used in people’s everyday office environment, it is crucial to explore how the scenario may be made to fit into existing practices and resources available in that particular environment. Examples include not only the tasks that users need help with, but also the kinds of equipment that they use today, and how these may be used in conjunction with the new companion system.

What do the people work with? Which tools do they use? Are there different roles? How does the activity in the office take form during a typical working day? Is there a formal or informal atmosphere? Do they have lunch and coffee breaks together? Is it OK to talk about not work-related topics in the office, or do people tend to leave the room e.g. to make phone calls?

One possibility is to consider how the suggested tasks are already solved and follow up on how people engage with such technologies and practices already. For instance, an answering machine is often a normal phone that is put in a special mode. Reminders are something quite personal and often discreetly delivered to a personal device, which also protects the

user from a privacy perspective. Such reflections and motivations are important could be worth exploring in more detail with user-scenarios.

Finally, for inspiration we suggest to have a look at Erickson et al's (2008) paper about a study of the work practices of human administrative assistants. It brings up many interesting further issues that could be related to the TeamBuddy scenario.

How would a user interact with the system?

The scenario mentions personalization as one of the competences to be expressed in the TeamBuddy. This is primarily intended to take form as personalised interactions, which involves how "the companion 'remembers' what the user likes/dislikes and something about their personal life". What we would like to comment on here is that likings and preferences may change over time and between contexts, which may be worth addressing explicitly in the design. Another aspect that one may need to be sensitive to is how recording information about the personal life of users may involve issues of privacy. We see these as important and interesting design challenges to explore further in this scenario.

As we have understood the scenario, personalisation of the robot is envisioned as primarily implicit (the robot should automatically learn to recognize personal preferences, etc). A potential extension could be to explore how users may engage in more *explicit* training and teaching of the robot. Based on previous studies, this could be a useful strategy also for establishment of a relationship between the user and the companion, which is also one of the main goals in this scenario.

Without using the terminology of programming or learning algorithms, it could also be relevant to explore simpler modes of personalizing the behaviour of the robot, e.g. to adjust certain settings, or to have different "themes" (change voice, appearance, colour, etc) to make it more personal. Other aspects of appropriation and personalisation concern whether e.g. it is possible to decorate the surface appearance to fit better taste of the users or with the interior style of this particular office, etc.

A description of how people are thought to interact with the system would help when it comes to discussing what the robot could be used for and what people would expect from it. This does not mean that you have to decide what the robot should look like or how it should work in detail, but a sense of what users perceive of the robot.

How would several people interact with and through the system?

This scenario is explicitly designed to involve several users interacting around the same robot system. How many users may interact with the robot at the same time? How may multiple users interact with or around the robot? Is it possible to communicate digitally through the robot, and how is that envisioned to be done? What happens when a new member enters the research group?

An interesting aspect of this scenario is the decision to design the robot for the environment of the designers themselves. This is obviously a useful and convenient way to work, but it also means that the robot will become both the object of investigation as such, and at the same time aiming at fulfilling the task as an "office companion". This dual function may not necessarily be a problem, but depending on the user studies aimed for, this may result in some ambiguous outcomes e.g. in terms of expectations, acceptance, learnability and attachment (and eventually possibly also questions of research validity).

As a way of getting around these kinds of issues it may be worth considering environments where the designers are not the same as the end users. The simplest could be to engage a group of colleagues (perhaps in a neighbouring office?), to act as test partners for further development of the scenario, sketches, prototypes and showcases. This would mean that the technology could still continuously be tested and tuned in the environment of the developers, and only temporarily be moved for user testing, etc.

What ethics issues are involved?

Perhaps the most important ethics issue that we see for this scenario is that there are generally some publicly regulated standards for health, safety and security at workplaces. This may be relevant e.g. when it comes to the noise levels that the robot should be allowed to produce (when actively interacting and well as in standby mode), the positions that the robot should move to (e.g. blocking of doors), and the ease with which the robot could be manually put aside (e.g. in the case of fire).

Another issue that we mentioned in Deliverable D10.1 as an ethics concern was that of user *expectations*, e.g. as researchers orient oneself towards and to work against what we refer to as a *robot cargo cult*. What do people expect the robot to be able to do? How are the capabilities of the robot manifested in the design?

Apart from the memory-oriented tasks, it seems that the identified tasks in this scenario are similar to what might be expected of a human assistant, and considered mundane e.g. answering phones, fetch and carry items, greet and introduce visitors, find lost items, collect dishes, water plants, etc. A risk is that while these may seem mundane and trivial to the workers, these tasks may be overly complex to design into a robot. Are there any ways of addressing the (often) too high expectations? (e.g. to limit the scope of what the robot should be expected to do)

In terms of sustainability, for how long is this robot intended to be working? How much electrical power does the robot require? Is it possible to make the power consumption more efficient? Can the user switch off the robot when not in use, or does it need to stay in standby mode? Can the robot be used for anything when switched off (e.g. as table)?

Regarding privacy, does the robot record any data from the users? Do users feel as if the robot record data? To what extent should users have the right to ask about people not present, is there any social consequences that this may bring along?

3.3.2 The “Personal Guide” scenario

What is the context of use? Who are the users?

The context of this scenario is a lost person at the main campus of the Heriot Watts University in Scotland. To understand the real challenges addressed in this setting, this environment could be described in more detail.

As a system aiming to be used along a designated route, it is relevant to explore how the scenario may be made to fit into existing practices and resources available along such trail. For instance – how could the agent stitch together specific experiences where the user would be in charge of steering its attention to interesting objects observed along the route? How can invisible things (e.g. details or hidden in history) be visualized and re-played?

How would a user interact with the system?

Does this scenario involve pre-scripted sequence of actions, or could it involve staying open to multiple uses of the robot? As a guide, should it be able to adapt to the user's preferences along the route or should the user be the one to adopt? For this purpose, it could be useful to list a range of activities that the personal guide may support, as a way of broadening the scenario and also as a way of addressing the complexity of human environments and activities.

Considering that the personal guide is intended to support the user while he/she is moving around on campus, e.g. by walking, what modalities could be used to support this interaction? It may be very important to think about safety issues: for instance, does the user need to look at the character on the display of the mobile device to get directions and similar, or could he/she get support by speech or tactile feedback?

What would happen if the user deliberately or not deliberately takes another direction than the one that the personal guide suggests? In a similar way to using GPS systems in cars, the person following the directions may end up taking a different road by mistake. Would the personal guide be able to dynamically help the user?

Personalization in this case could be thought of as the branching choices leading to individualized paths – hence individual experiences related to the companion.

In what way can the character of the personal guide be integrated in the storyline? How can it be presented to the user so that it enriches and enhances the experience of exploring for instance a campus? How could we make it interesting and intriguing?

It seems from earlier studies, that people prefer to be seen as active participants, a perspective that is present in the scenario, but that could potentially be made more explicit by sketching out the scenario in more detail.

How would several people interact with and through the system?

The scenario is currently intended for one person at a time.

What ethics issues are involved?

As mentioned briefly above, safety issues may be of importance here, as it could potentially be dangerous to use a visual display-based system while moving in a busy area with cars, people on bikes, etc.

Does the robot record any data from the users? Do users feel as if the robot record data? Are there potential qualities of a personal guide that is socially or culturally sensitive?

4 Summary

From our perspective of user-centred design, we encourage our partners to increase the focus on users in LIREC, and suggest that a good start would be to re-write the existing written scenarios so that they include users as well and not only the companion in question. Taking the “Teambuddy” as an example, this scenario should give a better picture of who the users could be. In a social office context, who are the people working there, what are their roles, goals and motivations in doing their job, how do they socialise with each other, and how could the Teambuddy fit in into this context? We hope that questions like the ones above can help pointing out what kind of information is important from a user-centred perspective.

At the design method workshop at FoAM, we gave examples of different methods that could help generating scenarios that include the values, interests and activities of potential future users. One method is *personas* (Cooper 1999), which could help providing a better idea of who a future user could be. Personas are fictitious characters that are synthesized from interviews with people to represent a user of a certain system/product. When describing a persona, it is important to include details like that person’s interests, skills, attitudes, limitations, goals, behaviour patterns, etc so that we can imagine how that person would act in a situation. This way, a persona can guide decisions about design and help keeping the focus on the intended user’s interests and needs (instead of e.g. the designer’s).

Another useful design method for designers/developers is *bodystorming* (Oulasvirta et al, 2003), in which you explore an idea/concept/scenario in the context (e.g. social, physical) it is intended for, by role playing and acting out. It can be powerful in giving new perspectives on an idea, simple because you explore this idea in the real-life setting in which it is intended for. In bodystorming, you can use mock-ups, Wizard-of-Oz set-ups etc of the system, which

let you explore the idea before you have even started building. By using personas (*who* are the users?) and bodystorming (*what* and *how* and in which *context* are they interacting with the system?) techniques, we believe that it will become easier for the partners to get a better sense of future users and then re-write the scenarios including those users.

As suggested at the workshop, using these techniques does not have to be difficult or time consuming. Using the Teambuddy as an example, it could involve interviewing people at the same department or research group to learn more about what they do in the office, how they do it, and why. This data could then generate one or several personas that can be used in the Teambuddy scenario. For example, maybe such interviews will show that people working in the office are very social and good at informing each other about meetings, seminars, etc. during coffee breaks. How would this affect the Teambuddy scenario, and so on?

We think that the current written scenarios from HW, UH and INESC-ID would benefit greatly from and become much more powerful if they would include a richer description of the intended users and their goals when interacting with the companions and robots that LIREC aims to develop. This, in turn, will make it easier to convey the value of the scenarios and communicate this to others.

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