DELIVERABLE D1.1 REPORT

CO-DESIGN OF USE SCENARIOS AND USER REQUIREMENTS

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1   Description

This deliverable *D1.1 Co-design of use scenarios and user requirements* reports the first co-creation activities carried out for the MuMMER project, as described in the task *T1.2 Co-creation of use scenarios*. The main purpose of the task T1.2 is to engage the recognised main stakeholders – consumers, retailers, and management and personnel of Ideapark shopping centre – to co-create meaningful and commercially interesting use scenarios for Pepper, the interactive entertainment and customer service robot to be taken into use in Ideapark.

The deliverable describes the co-creation activities and their results concerning stakeholder-generated **ideas** for use scenarios as well as the stakeholders' **desires** and **worries** related to Pepper and shopping mall robots in general. In addition, the deliverable includes initial description of the **success criteria** to be used in assessing the success of Pepper's implementation in the shopping mall (especially in the final long-term field test in the fourth year of the project).

The co-creation activities so far include:

- a workshop for Ideapark personnel and management
- a workshop for consumer customers of Ideapark
- three interviews of retailers in the shopping mall, who are also tenants of Ideapark but arrange their business independently of Ideapark. (All commercial tenants have to commit to certain rules and practices of Ideapark such as certain opening hours.)

The main result of this deliverable is the MuMMER scenario "*The Host of Ideapark*", which has been selected to be implemented on Pepper within the next six months. The scenario is strongly based on the stakeholders' shared ideas and perceptions of how Pepper should behave in Ideapark shopping mall. The scenario includes three sub-scenarios:

- welcoming and greeting customers of Ideapark
- providing basic information and guidance for customers
- allowing customers to take a "selfie" with the robot

This deliverable will be annually updated with new or adjusted co-designed use scenarios until M40.

2   Methodology and participants

2.1   Idea-generation workshops with Ideapark staff and consumers

Initial perceptions of Pepper and shopping mall robots in general, and ideas for Pepper use scenarios in particular, were collected from Ideapark management and consumers (Ideapark customers) in idea-generation workshops, which were arranged in a meeting room at the Ideapark shopping centre. The first idea-generation session was organized with 6 participants representing Ideapark management, marketing and communications, personnel working at the information desk of the shopping centre, and maintenance services in the shopping centre. The second workshop was arranged with ten consumers (6 males, 4 females, average age 49 years), who were recruited via an advertisement in printed Ideapark advertising magazine, on VTT's social media channels (Facebook and Twitter) and via a press release http://bit.ly/28KcFjn. The 2-hour workshops were audio recorded, and the one with consumers included two simple pen-and-paper idea-generation tasks. Pepper was present at the consumer workshop.

The workshops proceeded as follows:

1. Short introduction of the project and the idea of the workshop
2. Short discussion of the general impressions of Pepper
   - In the management workshop, based on a picture and basic information about Pepper

- In the consumer workshop, based on Pepper present at the workshop (in "idle" mode – without showing any applications)
3. Idea-generation of usage purposes for Pepper in Ideapark
    - In the management workshop, ideating and discussing usage purposes
    - In the consumer workshop, writing ideas down first on post-its, then discussing them
4. Listing and discussing the concerns related to use of Pepper in Ideapark
    - In the management workshop, identifying and discussing potential problems and risks
    - In the consumer workshop, writing potential problems and risks down on post-its, then briefly discussing them

To illustrate the functionality and possible interaction situations of Pepper, three short videos were shown to the participants: The first presented Pepper as a general attraction in a Japanese shop (people taking photos and discussing with Pepper), the second showed a situation where Pepper provided marketing information on an item in sales (Pepper marketing a coffee machine for one person) and the third illustrated how Pepper could serve a customer in a clothes store (giving recommendations and providing information based on QR codes of products).

2.2 Interviews of retailers

A sample of the retailers of Ideapark was invited to attend one-hour interviews. The contact information of the retailers was received from Ideapark management. The originally planned joint workshop with retailers was not organized, because of their varying schedules and their potentially specific needs related to their store/retail. In individual interviews, the retailers are able to talk about their business-related needs and ideas more freely. Three retailers attended to the interviews, which were organized in the meeting room in Ideapark. More retailers will be interviewed later on.

2.3 Analysis of data

All data from the workshops and interviews were analyzed qualitatively. The idea and concern post-its collected in the consumer workshop were grouped according to their affinity, which formed bigger data-driven themes of the data. The themes and number of post-its in each group are listed in tables 2 and 3.

Figure 1. Idea post-its from the consumer workshop grouped according to their affinity.

3 Results

The following summarizes the main results of all three target groups.

3.1 Ideas from Ideapark management

Only one participant had seen Pepper before. Based on the first video, the participants' reactions were very positive about the smooth movements and pleasant and also "human" appearance. *Photographing* and

sharing the photos on social media was suggested to be the first thing that customers would want to do with the robot. Also they should just be allowed to watch when others interact with the robot.

The **ideas for usages** of the robot in Ideapark mainly circulated around the role of Pepper being *the host of Ideapark*: welcoming people at the entrances, telling information and stories about Ideapark, and making "tricks" (entertaining people). Pepper should work as a *guide*, tell and show locations and take customers to the places they wish. It should tell about the campaigns in shops. At Christmas time, the robot could help the Santa and listen to the wishes of the children. (In the early years of Ideapark, there used to be a hired senior person to host customers this way. He welcomed people and created a good atmosphere in the mall. Later he retired and has not been replaced.)

The robot could also tell people their horoscope and *give small but necessary items* in the shopping mall: balloons, vouchers, maps, marketing materials and candy. The items could be placed on a plate carried by the robot or a human beside.

Other ideas included *guiding people back to their car* in the large parking area when leaving, and making friendly comments about cars parked wrong. The robot could also *observe and possibly record events and deviations* (e.g., trash, water on the floor) of the environment and communicate those to the responsible person. The recording should naturally comply with the related regulations.

The most interested **customers** would be, according to the staff of Ideapark, *young people and children*. Children however might just like to play with the robot (not necessarily consenting to the games provided by it). Adult users would more probably use the robot as it is suggested to be used.

Elderly customers are a very interesting user group for Ideapark as their amount is increasing and they have wealth and ability to respond to new services. As users of the robot, they might be more doubtful than the other age groups, at least in the beginning. Elderly customers might be interested in having the robot leading their weekly guided walking tour in the shopping mall. The "shopping mall walk" is for 60+ customers, includes an exercise phase and morning coffee, and provides the elderly relevant news about Ideapark and retailers on the way.

Another user group would be *robotic hobbyists and programmers*. Ideapark would like to arrange a workshop event for children and programmers to get together and learn to program new applications for Pepper.

There was some discussion on how the robot should utilise its capability to recognise **emotions** of people and adjust its behaviour accordingly. If the robot is able to recognise a crying child, it is not clear whether people accept that the robot tries to comfort the child. *Maybe the robot should respond (visibly) only to positive feelings*. It might also try to calm down tired and nervous men in the mall.

The **worries** presented in the workshop included the *practical problems* of what to do if the robot gets broken, and how to monitor or guard it so that it won't happen. In particular, children may want to touch it. The robot could also cause *fear* in some people, however, this is a small probability due to Pepper's child-comparable size. On the other hand, people might *attach too much* to it.

Another issue is that people may not want to approach the robot because they *don't know what to do* and how to interact with it. To alleviate this effect, the robot is good to introduce events on the main stage and then take it to backstage room to meet a smaller number of people (selected e.g. in a lottery).

One concern was that how to secure Pepper from being *stolen*. In shopping centres, "everything loose is stolen". (During the project, Pepper will be escorted by a researcher or employee of Ideapark continuously.)

The expected value of the robot for Ideapark is naturally in the increasing business but it is also related to image issues and customer satisfaction. Considering a **success criterion** to measure the impact of Pepper on the aspects that Ideapark values, the initial criteria are described in Table 1, with their suggested operationalisation for measuring and comments about their usefulness for the research.

Success criterion	Operationalisation (i.e. how the criterion can be measured)	Comment
The amount of customers in the shopping mall	The amount of customers in the shopping mall per month	Monitored by Ideapark. Have to consider when and in which periods this measure is taken for research.
Visibility of Ideapark in different media	Media hits	Monitored by Ideapark
Customer satisfaction	Questions/statements included in the periodically repeated acceptance questionnaire that is part of T1.3.	Difficult to measure because many customers come very rarely. The trend can be measured.
Image of Ideapark being the first, being in the front line	Questions/statements included in the periodically repeated acceptance questionnaire that is part of T1.3.	
Image of Ideapark being involved in developing the welfare of society (not just own customer flow)	Questions/statements included in the periodically repeated acceptance questionnaire that is part of T1.3.	
Pepper applied by retailers, e.g. selling phones	Number of retailers applying Pepper. Satisfaction of the retailers for Pepper. (See also "Sale of retailers")	Depends greatly on such functionality of Pepper that can be applied in retail work – this might not be part of the project at all.
Sale of retailers	Monthly sale (or sale of other period agreed with the retailer) Satisfaction of the shop manager to sale (especially if the shop is not willing to reveal their selling numbers)	Monitored by each retailer. Ideapark does not expect that Pepper would have impact on the selling of retailers. Also: used vouchers provided by Pepper (see section 3.3 Retailer interviews)
(Positive) attitude toward interactive service robots (in general)	Questions/statements included in the periodically repeated acceptance questionnaire that is part of T1.3.	The trend can be measured. Literature provides some starting points (e.g. *Eurobarometer 427 Autonomous systems*). Change in attitudes does not necessarily relate to Pepper, Ideapark or MuMMER at all.

Table 1. Initial success criteria of Ideapark for measuring the success of installing Pepper in Ideapark.

Considering the future use of service robots in shopping malls, the participants suggested that in addition to more and more prominent role of being a welcomer and guide for the customers, robots should help in transferring items, for instance shopping bags, automatically. In maintenance tasks robots should take objects to their locations, clean and make notes of faults and deficiencies. They could also measure temperature, humidity and quality of the air (CO_2) in the mall. The robots should be monitored only remotely. Their technical functionalities and reliability should be improved.

3.2 Ideas and concerns of consumers

The main results of the consumer workshop consist of the usage ideas for Pepper in Ideapark and concerns related to its use.

Participants' overall attitude to Pepper was rather open and positive, which was reflected in the variety and number of usage ideas they proposed for Pepper. Most of the participants' ideas were related either to using Pepper for providing *guidance and information* or using it as a general attraction in Ideapark, which could *welcome and entertain* customers, for instance by *hosting events* or by *chatting with people*. Ideapark could also have a specific area for Pepper – "*a robot park*", where customers could visit and interact with Pepper and *take photos with it*.

In addition to guiding and entertaining customers, participants proposed tasks which would *promote sales and marketing* e.g. by informing of special offers and ad-hoc campaigns or distributing *discount vouchers to shops*. Pepper was proposed to provide help (or a familiar place to come) for *lost children* or some *assistance for elderly* people, such as calling for a taxi or carrying shopping items. Also acting as an *interpreter* between languages was suggested. Pepper could also be used for entertaining children (e.g. telling interactive stories), e.g. at *birthday parties* organized at PiiPoo centre for art and culture. Pepper was not proposed for tasks replacing personnel (except one single mention on serving as a cashier), but rather for complementing and enriching current services or bringing extra entertainment for customers.

The most concerns related to Pepper were related to *responsibility issues*, such as who is responsible if something adverse happens, or whether it can give false information, cause a danger (e.g. overheating) or be hacked. Also *privacy and copyright issues* were mentioned, and transparency (e.g. for what is stored and where) would be required. Some concerns were related to the *technical issues and limitations in functionality* of Pepper: whether it hears well enough in the noisy shopping centre and understands Finnish (e.g. different dialects), whether it can concentrate on one person during the interaction when needed and in general, whether it functions as it is designed to. Some participants mentioned that one concern is whether Pepper is used in interesting and appropriate way to avoid people getting bored with it or it being at the shopping centre without proper use. The participants also acknowledged that some people (e.g. children, elderly, mentally disabled) *may forget that Pepper is a robot*, not a human, which may cause problems. Too human looks of Pepper may scare children and Pepper may also be *mistreated*, e.g. by shoving it. The participants emphasized that Pepper should not be left alone with children.

The following tables (2 and 3) present the number and key content of the ideas and concerns of the participants based on the post-it idea-generation. The number of ideas proposed for usage purposes was 97 and the number of concerns (potential problems and risks) mentioned was 58.

Usage purposes of Pepper	Number of post-its	Examples
Providing guidance and information	40	- Answers questions like "where is the nearest toilet?", "where is a shop x?", "where can you buy an item x?", "how long is a shop x open?", "what to buy as a present for a 14 year-old boy?" - Works with different languages / acts as a translator
Welcoming customers / general attraction / host / entertainer	13	- Hosts events (e.g. sings / tells jokes etc.) - Offers a possibility to take photos with it (and sends them to the person) - Can be visited and chatted with in a "robo park"
Marketing and sales	10	- Tells about special offers and campaigns - Gives discount vouchers

Keeping company (e.g. when shopping, queuing or waiting)	9	- Keeps company when needed: when queuing, for bored spouses etc. - Serves a shopping buddy: chatting and giving information/recommendations
Assisting elderly	6	- Carries shopping items - Guides to a desired place - Calls a taxi
Helping with lost children	5	- Provides a safe place where a lost child can come and wait for the parents (and be entertained by the robot)
Entertaining children	4	- Plays with children or gives candies - Attraction at the birthday parties arranged at PiiPoo art and culture centre
Other ideas	10	- Guides workout for personnel - Collects donations - Offers a possibility for "robo coding" - Works as a cashier

Table 2. Results of consumer idea-generation: usage purposes for Pepper in Ideapark.

Concerns of using Pepper	Number of post-its	Examples
Something goes wrong / responsibility issues	24	- Gives false information, which causes a danger or harm - The robot is hacked - It is unclear who is responsible of the robot
Technical problems and limitations	15	- Limited understanding and vocabulary of the robot, does not understand e.g. dialects - The battery empties in the middle of the work shift
No proper role for Pepper / uninteresting ways to use it	8	- People get bored with the robot if it has no proper tasks - Pepper is seen as a toy, not as something useful
Misuse and vandalism	6	- Someone (a child) breaks Pepper e.g. by pushing or twisting it
Too human/strange appearance and functionality	5	- Children may be scared of the robot - A child, elderly or mentally disabled person may forget that the robot is not a real friend

Table 3. Results of consumer idea-generation: concerns of using Pepper in Ideapark.

The full list of consumer ideas and concerns can be found in Appendix 1.

3.3   Ideas from retailers

The first retailer interviews give initial understanding of the needs and ideas of different kinds of retails. The first interviewees were a store manager of a specialized shop (case 1), a store manager of a game store (case 2) and a restaurant manager (case 3) (two males, one female). In the following, these are presented as cases enlightening the desired role of Pepper for the needs of different retailers.

Case 1: Pepper as a greeter

The store manager of a specialized shop perceived the most value in Pepper in its potential to *increase the awareness* of her shop among Ideapark visitors. This could be done by drawing people in front of the shop or by inviting them to visit the shop if Pepper would be located further away. The latter could be done for example by offering a free analysis related to the visitor's personal habits (this analysis is currently advertised e.g. in printed media). As the shop is located near one exit of the shopping centre, she feels that people often rush by the store without noticing it at all. She has tried different means to *draw people's attention* to her shop, such as an illusionist making tricks in front of the shop. However, Pepper might work better, as it could offer also information related to the services of the shop or ask a person to make a simple test which would promote their products. Pepper might make the shop *easier to approach* by breaking the somewhat "clinical" appearance of the shop.

In this case, the most potential role for Pepper would be a greeter, which would be located in the front part of the shop drawing people's attention and attracting them to come inside. It could also entertain or inform a potential customer if a sales person is occupied. However, it could not replace the service received from sales personnel, as the actual customer service or presenting the products requires a possibility to have a through conversation with the customer without disturbance. The discussion may take even two hours and contain also personal information. In this situation, Pepper could *help maintaining the undisturbed situation* by entertaining children or new visitors if needed.

Case 2: Pepper as a promoter

The store manager of a game store perceived the most value in Pepper for his store in the potential of *promoting special campaigns and highlighting their services* that are important for the store but not known among many customers. In his store, Pepper could promote the possibility to sell one's old games to the store, to pre-book a game and to buy a guarantee. For new games, it could offer information and a possibility to *watch a trailer* on its screen. It could also provide information on the games targeted to children as the customers do not know these as well as other games. In addition, it could give simple *information on age limits*, as they are often not known or misunderstood. As entertainment, it could potentially offer *simple games for small children* (less than 7 years old), as the older ones participate in browsing the games to be purchased.

Background music and customers make the small store rather noisy. Thus, the most natural and convenient way to operate Pepper would be through its tablet. This might also lower the threshold to use Pepper, as Pepper may not understand what it is said and talking aloud may feel too odd or inconvenient (compares this to using hands-free which can be felt awkward). As the store has narrow aisles, the best place for Pepper might be near the exits, where it could welcome the visitors. If Pepper would be located elsewhere in Ideapark, it could inform potential customers of the location of the game store. Giving special discounts would not be a very interesting option, as the prices of the products cannot be locally decided (all stores have the same prices). Also piloting Pepper in a store would need applying permission from the manager of the store chain.

Case 3: Pepper as a butler

The restaurant manager of several restaurants in Ideapark perceived the most value in Pepper in its potential to serve as a butler in a restaurant – *answering to the numerous questions* of the customers, *collecting feedback* and *creating nice atmosphere*. Currently, some information, such as the lunch list of the day, is shown on an information board in front of the restaurant, but personnel is too busy to answer to other questions. There are plenty of frequent questions, such as whether you have a play area for children, how long the food is served or what is the waiting time for receiving a meal. The latter is a question, which is answered when asked, but it is not something that would be placed visible for everyone on the information screen. Collecting feedback is important for the restaurant and it is currently asked via QR codes at the tables of the restaurant. However, the restaurant would be willing to receive more feedback and introduce new ways to collect it.

In the restaurant, Pepper could offer customers a possibility to answer whether everything is ok, and if not, *call a waiter* to handle the situation. It could also *entertain children* and answer their questions, such as whether it is possible to take a balloon (available in the restaurant). However, it is possible that some children would mistreat Pepper; the personnel is not able to watch over it, and parents may just want to concentrate on eating and let the children play without keeping watch. If Pepper would be located at one place in the restaurant, welcoming people in the front of the restaurant would be the natural place. Pepper could also welcome customers to visit the restaurant again when they are leaving. If Pepper would be located elsewhere in Ideapark, it could tell the locations of the restaurants and answer to the questions, such as whether you can come with a baby carriage, whether the restaurant has a lift or where you can get hamburgers. Pepper could *give a discount*, which could be received for example by saying "greetings from Pepper" in the restaurant.

In general, Pepper would be very welcome to be piloted in one of the restaurants and the store manager has a very positive attitude to it. He thinks it would not drive away any customers, but raise interest of many.

Summary

In general, the interviewed retailers perceived Pepper positively and were willing to take it to be piloted (if allowed by the store chain). The following table (Table 4) summarizes the key insights of the interviews and differences between the needs of the retailers.

Store	Potential key objectives for Pepper	Potential key tasks for Pepper	Ways to measure the success of Pepper	Issues to consider
Specialized store (family business, several stores)	Increasing awareness of the store	-drawing people's attention to notice the store -inviting new customers to the store	Number of new customers	Customers need to be served without disturbance
Game store (part of a store chain)	Promoting specific services of the store	-informing of the services that are important for the store but not known by all customers -showing trailers of new games	Number of the services used / increase in sales	Noisy environment, narrow aisles, all decisions need approval from the store chain

| Restaurants (part of a restaurant chain) | Welcoming customers and providing information; collecting feedback | -welcoming customers / welcoming them back when leaving

-answering to questions

-collecting feedback

-entertaining while waiting for the meal | Number and quality of the customer feedback (through Pepper / of Pepper) | Noisy environment, Pepper cannot be watched over |

Table 4. Summary of the needs of retailers.

All three retailers considered that instead of a physical voucher to be given to a shop assistant, Pepper could just show a simple code word on its screen for the customer, who would then get discount for that code word in the shop. Or even more simply, Pepper could advice to tell "regards from Pepper" to the shop assistant. (For measuring that how many customers come to the shop because of voucher/suggestion from Pepper, these means are unreliable.)

4   Conclusions

The management and personnel of Ideapark expects Pepper to be a welcoming, entertaining and guiding host to customers, creating a good atmosphere in the shopping centre. In the beginning, Pepper will have a lot of novelty value, people will want to take photos and selfies with it and share them on social media, and this value should be showing in increasing media visibility of Ideapark. Other important success criteria are the number and satisfaction of customers in the mall, which however are sensitive to other factors than Pepper. The trend can be measured and when the measurements are done repeatedly, activities with Pepper will be tried to be connected to the results. Still another criterion is the interest of retailers in applying Pepper in their services.

Based on the first consumer workshop, Pepper has potential in attracting consumers in general (chatting with people, taking photos) and to be used for providing useful information of e.g. locations of shops. It has a clear novelty value, which also creates concerns. Both responsibility issues and incomplete functionality should be taken into account when presenting Pepper to Ideapark customers. Providing transparency (of Pepper's development, storing information etc.) and using Pepper first in a relatively quiet place can be solutions to overcome these concerns.

The first three retailer interviews created initial understanding of the desired usage purposes for Pepper from the perspectives of different kinds of stores (with different services and needs). The value of Pepper was seen in its potential to attract new customers, welcome them, promote services, answer frequent questions, collect feedback and entertain children or customers waiting to be served. In general, Pepper was perceived positively and the interviewed retailers were willing to participate in piloting it.

Based on the workshops and interviews of all target groups, the first scenario to be implemented, "The Host of Ideapark", should include welcoming and greeting customers, providing basic information and guidance (where is a toilet / a specific shop; where can I buy…) and taking a "selfie" with the robot.

5   Outputs and Future Directions

The next step is to formulate the Host of Ideapark scenario in such a way that it can be shared and discussed with technical developers in detail, to understand that for which aspects of the scenario there is a need to collect more detailed user requirements of the human-robot interaction. After these aspects are identified,

the objective and subjective metrics for evaluating the interaction can be selected in cooperation with the technical developers.

Interviews with retailers will continue and new workshops with consumers will be arranged, to collect the detailed user requirements and to develop new scenarios and adjust the first one (the Host of Ideapark). Also, field trials to evaluate the functionalities of Pepper (implementing the scenario(s)) will be started as soon as they are available. An acceptance study including questions/statements related to the success criteria of Pepper will be carried out first time in the second half of September.

It has been agreed with the MuMMER consortium that Pepper would be publicly introduced in Ideapark in the second half of October.

6 Deviations

The originally planned workshop with retailers was replaced with individual retailer interviews due to the difficulty in agreeing common workshop time with several retailers and to the expectation that the retailers are able to discuss more freely about their business and perception of robots when only researchers are present.

Appendix 1

Initial results from the workshop with consumers (Ideapark customers)

June 30th 2016, Ideapark

Participants:

- 10 participants, 4 females, 6 males
- Age: 26 – 66, average 49 years old
  - o 25-39: 2 persons
  - o 40-49: 4 persons
  - o 50-59: 2 persons
  - o 60+: 2 persons
- Relatively positive attitude to social robots
- Relatively knowledgeable about social robots

Moderator: Päivi Heikkilä, VTT

Other attendees: Mari Ylikauppila & Anne Arvola, VTT

1) **Initial impressions of Pepper**

  - Sympathetic
  - Like a cute puppy
  - Easy to approach, the size of a small child
  - Differs enough from a human, does not try to be too human-like (a positive thing)
  - Thinking about the appearance: would it be possible to put clothes/ accessories/stickers etc. on Pepper? Still should be easily distinguishable from a human.
  - Seems to hear quite poorly, you need to speak loud in order to get its' attention
  - In a shopping centre, can it pay its attention to one person at a time or is the interaction too easily interrupted?
  - In a shopping centre, how people approach Pepper – as people are used to queue, is it possible with Pepper (it can pay its attention to people who have not been queuing)?

2) **Potential purposes of use (user ideas)**
  - Information and guidance
    - o Replacing the information screens
    - o Giving a map on Pepper's screen
    - o Shortest route to a desired place
    - o Giving answers to questions like
      - ▪ Where can I find this item
      - ▪ Where is this shop
      - ▪ Where is the closest toilet / cash machine?
      - ▪ What to buy as a present for a 14 year old boy

- How long is a shop open
- Bus time tables
- How is this translated to Finnish (language interpreter for tourists, different languages)
- Anything you can find in the Internet
- Acts like Alexa/Amazon or Siri/Apple
- What could I eat today (gives a recipe of the day)
- Where is my car? (where is the closest exit – if information of the parking place is available / marked down earlier)
- Guidance inside a store (where can I find a certain item)
  - Especially for new customers
  - Accessibility: Route for people with disabilities (reduced mobility / sight)
  - Especially for tourists: could it also advertise entire province and tell about the regional attractions (also outside the shopping mall)?
  - Assisting in emergency situations: having a defibrillator in a backbag
- "Robot park" where you can visit Pepper
  - Especially a place for children ("baby sitting")
- Help for lost children
  - Offers a familiar place where a lost child can go
  - Can it recognise a crying child?
- Entertainment and general attraction for Ideapark shopping mall / events
  - Saying welcome / thank you for visiting at a door of Ideapark
  - (The participants did not say this, but many of them approached the robot wanting to shake hands with it. Thus shaking hands might considered as a skill for the robot)
  - Can Pepper take photos/videos of Ideapark events and share those in social media (see what happens now in Ideapark)?
  - Host/entertainer for events
    - A small performance at the central square of the mall
    - Takes a photo and sends it to the person (e.g. email)
    - Dances
    - Tells jokes
  - Attraction for the children's birthdays (are arranged in the PiiPoo centre of Ideapark – centre for art and culture for children)
  - Telling stories for children in interactive way (e.g. pausing the story when children speak)
  - Entertainer in queues, telling e.g. what happens in Ideapark
- Adverstising/ sales
  - As an overall attraction / crowd-puller in the mall (cf. above)
  - Advertises special offers/shops
  - Gives recommendations in shops/restaurants, like a menu of the day
  - Gives offer coupons
  - Ad-hoc campaigns (e.g. for groceries that need to be sold quickly)
  - Sales person (at a cashier of a shop)

- o Selling something (a certain item)
- Social buddy
    - o Chats with people in a café
    - o Chats with bored people
    - o Shopping buddy / assistant
        - Can it recognise your size and the brand of your clothes and make recommendations based on that?
- Personal assistant, especially for elderly people
    - o Interpreter (for tourists for example) & usage in different languages
    - o Calling for a taxi
    - o Carries your shopping items / shopping cart
    - o Helps people with disabilities (reduced mobility / sight) e.g. to find the best route
    - o Helps to find your car in the parking place
    - o Is it possible to reserve Pepper for you?
- Other
    - o Guides workout for personnel (or customers)
    - o Gives a massage ☺
    - o Collects donations
    - o Offers possibility for robo coding
    - o Acts as a WIFI station?
    - o In a restaurant you could make your offer beforehand for the robot, and your meal would be waiting for you when you came to the restaurant
    - o (jokingly said) Pepper would stand in ques for you
    - o A store detective. With its' camera the robot could observe if somebody is stealing something and say "take the candies out of your pocket".

Concerns

- o Privacy issues
    - o If the robot takes photos and voice recordings, how is privacy taken care of?
- o Copyright issues
    - o If the robot takes photos and voice recordings, how are copyright issues taken care of?
- o Responsibility issues
    - o Gives false information
    - o Hackering
    - o Causes a danger (e.g. overheating)
    - o People bump to Pepper
    - o Cannot be left alone with children
    - o One should know who is responsible if something negative happens with the robot
    - o Transparency as one solution: People should know where it stores the information it records and who is responsible for the programming and function of the robot
- o Functionality and flexibility
    - o The participants wondered if the robot is able to answer all questions, react to everything what is said. They also suspected that it may not work in busy environment where there are lots of people around it. How it will manage to choose who to pay attention to?

14

- o It seems to hear badly (requires a loud voice or clapping hands before its pays attention to you)
    - o The robot should finish the thing (interaction) it has started and not to jump from one person to another. Possibility to reserve the robot until you are finished with your business with it, would be nice. A tag or something?
- o Technical problems
    - o Battery emptying in the middle of interaction / "work shift"
    - o Coding errors
    - o Does not work properly, e.g. answer to questions or understand Finnish
    - o Cannot understand different dialects
    - o Moves slowly and does not recognise if something is in its way
- o Vandalism or mistreatment
    - o Someone breaks Pepper, e.g. shoving
    - o Children may break Pepper or feed it with ice cream ☺
- o Needs an assistant
- o Having no real role/use in Ideapark – people get bored with Pepper
- o Pepper is too human-like or scares children
    - o Needs to be remembered that it is a machine, not a human
    - o Someone (children/elderly/mentally disabled) may think Pepper is a real friend, not just a robot
- o Visually impaired
    - o Is the robot able to give away to the blind and inform them about its' presence?
- o Hygiene
    - o The robot should clean its' hands very often.

Other

- The participants also suggested that the robot should / could be really interactive and able learn from people. For example ask people to tell jokes and thus gain a larger collection of jokes to tell onwards.

General remarks

- Games were not considered very interesting
- Interaction (also when telling stories): should be interactive and possible to interrupt