

CARESSES Culturally-Aware Robots and Environmental Sensor Systems for Elderly Support EU Grant No 737858



Work Package 1: Transcultural Robotic Nursing

Deliverable D1.1: Detailed scenarios

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Executive Summary

Deliverable D1.1 describes the work undertaken in Work Package 1, Task 1.1, in order to produce detailed scenarios to facilitate the development of culturally competent robots to work with elderly people who reside in assistive living facilities.

Informed by the work of Hofstede (1991), Papadopoulos (2006), a literature review and years of experience in nursing research and practice and in robotics, the researchers developed 32 scenarios based on 4 scripts describing four cultural groups. Each scenario provides a situation /activity described in the script and indicates the human and robotic capabilities needed to respond to the older person in the specific situation, in a culturally appropriate, sensitive and acceptable way.

Task 1.1 required to establish procedures for collaborative working allowing for an effective cooperation between partners with a different background in health & social sciences and robotics: this procedure might be considered as a secondary outcome of Task 1.1, as it may be the first step towards "best practices" for the collaboration of interdisciplinary consortiums in H2020 assistive robotics project.

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1 Description of the deliverable

1.1 Purpose and contents of this deliverable

The research undertaken for deliverable D1.1: *Transcultural Robotic Nursing: Definition of Scenarios*, constitutes important theoretical foundations for the whole project.

We have developed four scripts which we then used to prepare the detailed scenarios (see Appendix I). The scripts are: **Mrs Chaterjee** (an Indian Hindu woman), **Mrs Khan** (an Indian Muslim woman), **Mrs Smith** (an English woman), and **Mrs Yamada** (a Japanese woman). The decision to develop all female scripts was based on the belief that this would provide better control during the testing and evaluation stage, thus increasing the verification and validation of the results. However, we want to emphasise that a number of the situations we describe in the scripts, as well as some of the activities we have included in the scenarios, may not be gender specific, and can be easily identified if this is needed, for future planning. For example, the afternoon exercise routine, the receiving of a visit by family members, etc.

Another important decision we took was to acknowledge the vast differences of customs, rituals, beliefs, languages, religions etc, that exist in the Indian subcontinent, all of which impact in some way on the culture of Indian people whether they live in India or in another country (see diagrams 1 and 4). Because religion is a major factor and can be associated with specific regions and languages in India, we chose to develop scenarios that take account of the two major religions in India: Hinduism and Islam. Our primary aim in producing this deliverable was to avoid stereotyping or essentialising the chosen cultural groups by inappropriate labelling or insensitive language.

All choices that we have performed are coherent with guidelines in "BS 8611:2016:Robots and robotic devices. Guide to the ethical design and application of robots and robotic systems, The British Standards Institution 2016, Published by BSI Standards Limited 2016", and in particular with Guideline 5.1.5 "Respect for cultural diversity and pluralism":

Robot applications should take into account different cultural norms, including respect for language, religion, age and gender by formal interaction with representatives of these groups.

A total of 32 detailed scenarios have been developed: Mrs Chaterjee (10), Mrs Khan (4), Mrs Smith (8), Mrs Jamada (10). In each scenario, interaction patterns that are prototypical of real-life situations are identified (see Appendix I). The required robotic skills are also identified, by taking into account technological constraints to finally converge to a subset of interaction patterns that are realistically implementable on an off-the-shelf robot platform operating in a smart ICT environment. The reader may notice that the number of scenarios for Mrs Khan is smaller compared to other women: indeed, we have written ad-hoc scenarios for Mrs Khan only when cultural differences between the two Indian women are more relevant, whereas – in many cases - Mrs Chaterjee's scenarios for Mrs Smith is lower, since information included in other scenarios may be re-used for Mrs Smith, and we chose to include only information that is culture-specific.

As planned in the DoA, the four scripts are only loosely based on the scripts which were included in the submitted research proposal. In addition, we have chosen to focus on 4 cultural groups (instead of 3) and we substituted the Greek/Greek Cypriot scenario with the two Indian scenarios. The main reason for the

deviation from the original plan was the realisation that the Care Home partner (Advinia) does not have Greek/Greek Cypriot clients. The majority of the clients are of Indian origin/heritage. Following work on the methodology for this deliverable by the Middlesex University team, it was decided to develop the detailed scenarios on activities which the women in the new scripts engaged in, on a regular basis (see Appendix I).

1.2 The structure of the deliverable

As anticipated, the structure of the scenarios in this deliverable (see Appendix I) differs from that we used in the research proposal. The original scenarios were very specific in terms of what the robot should do. The new scenarios are more flexible as they allow the robot to draw from a set of capabilities which in run-time will be used in different contexts.

A template was developed and used for the new scenarios. The template is divided in two sections: a) the human section, and b) the robot section. The required information for each section is as follows:

A) Human section (orange part of each table in Appendix I)

- scenario title,
- the time of day the scenario is taking place,
- a description of the scene, including cultural notes,
- the functional areas of the house involved ("F" item list),
- relevant object involved ("O" item list),
- relevant persons ("B" item list),
- what a human caregiver can do ("H" item list),
- the cultural knowledge involved ("C" item list),
- which 'qualitative' caregiver behaviours are culture dependent ("D" item list),
- which 'quantitative' caregiver behaviours are culture dependent ("E" item list).

B) Robot section (green part of each table in Appendix I)

- what the robot shall / can do in this scenario ("A" item list, including a list of "surrogate" activities that the robot may perform to better meet technological constraints),
- robot motor capabilities required ("M" item list, including the corresponding functions in the Pepper programming interface),
- robot perceptual capabilities required ("P" item list, including the corresponding functions in the Pepper programming interface,
- robot verbal capabilities required ("V" item list, including the corresponding functions in the Pepper programming interface,
- which "qualitative" robot behaviours are expected to be culturally dependent ("R" item list),
- which robot behaviours are "quantitatively" different depending on culture ("T" item list).

1.3 Why this deliverable is needed in the project

D1.1 is crucial for the project. The scenarios provide the cultural competence description and the knowledge, which forms the base, upon which a number of Work Packages depend and build on. Specifically,

- D1.1 will be used in the next phase of WP1, which aims to develop guidelines for culturally competent robots;
- D1.1 will be used in WP2, WP3, WP4 starting from the beginning of month 3, in order to define a subset of robot's capability that need to be developed and integrated in the system to be tested and evaluated in the second half of the project;
- D1.1 will be used in WP7, in order to start defining the robot's experiment to be performed in care homes in the second half of the project.

2 State-of-the-art and advancement beyond

Thus far we have not been able to find any attempts to produce similar scenarios which aim to facilitate the cultural and technical processes necessary for the development of a culturally competent robot.

However, it is worth mentioning that scenarios - in the form of the "scripts" we have produced for this project (see Appendix I) - have been used in nursing as one of the main methods for learning to be culturally competent. Such scenarios are based on real patient cases (sometimes composite cases) which the students, under the guidance of their teachers, analyse theoretically, then apply in the clinical laboratory (in most cases), before applying them in the clinical environment with real patients.

Existing literature related to cultural influences on health, behaviours, customs, etiquette, and values provided the base for the creation of scripts and scenarios. We utilized the Hofstede's (1991) cultural dimensions theory to express (when appropriate) through the developed scripts and scenarios the well-known differences between UK, Japan, and India, on 'power distance', 'uncertain avoidance', 'individualism vs collectivism', 'long term vs short term orientation', masculinity vs femininity' and 'indulgence vs restrain'. Our goal was to express these subtle differences by the way the different women in the scenarios express their emotions/values, behaviours and ideas while interacting with their family members, friends and carers, and while taking decisions or making choices.

We also used well known resources such as the Papadopoulos expanded model of transcultural nursing and cultural competence (Papadopoulos, 2006) which provided the framework for understanding how individual cultural differences and similarities impact on health behaviours, attitudes to illness and health, expression of symptoms, family expectations during illness and health, and how therapeutic relations between user and carer can be formed and how they function in order to negotiate potential ways for restoring health and maintaining independence and happiness.

Trusted internet sites (BBC religions; WHO countries) where consulted to verify any assumptions made or to obtain more background factual information.

It is important to note that research literature in the field of ethnic minority ageing has argued for some time that culture and ethnicity among older immigrants is not static but rather 'fluid' and interdependent on social context (Zubair, & Norris, 2015). These ideas, along with existing literature on gender roles, the importance of family and the ageing process, influenced our scripts and scenarios (Ali, 2015; Zubair, Martin, & Victor, 2012; Victor, Martin, & Zubair, 2011).

Finally, we have found the standard on robots and robotic devices (BS 8611: 2016) a useful guide for this deliverable.

This deliverable is new with respect to the current state-of-the-art in many aspects:

- the focus on the culture and cultural identity of the client and their expression of these in everyday life scenarios,
- the identification of knowledge, behaviours, language and skills which will provide the robot with the necessary cultural competence to respond to the client sensitively and appropriately,
- the attempt to integrate our knowledge on ageing, immigration, health and culture,
- the recognition of the complexity of the undertaken task and the attempt to address the complexity by firstly focusing on similar everyday situations in the scenarios of the four cultural groups and on one gender (female), and providing surrogate ideas for the expansion of the robot's capabilities,
- designing and progressing (in the next stage) with the refinement of these scenarios by video recording real-life interactions which will be rigorously analysed by panels of experts.

3 Methodology

All partners of the consortium, led by Middlesex University, have closely cooperated for the production of the scenario tables (Appendix I).

The methodology of this deliverable is based on two main theories: i) Transcultural Nursing and Cultural Competence (Papadopoulos, 2006) ii) The Hofstede's national/cultural dimensions (1991). These theories enabled the researchers to make assumptions about the chosen cultural groups and identify the expected capabilities of culturally competent humans and robots, described in terms of Cultural Awareness, Cultural Knowledge, and Cultural Sensitivity.

Also, all scenarios assume that the robot (Pepper, developed by SoftBank Robotics, partner of the project) is equipped with off-the-shelf sensorimotor, cognitive and social skills. In each scenario, interaction patterns that are prototypical of real-life situations are identified, by classifying the required robotic skills (e.g., asking and responding to simple questions, performing simple movement, performing autonomous perception, care delivering, monitoring, empowering).

Based on these assumptions, the whole process of preparing scenario tables has unfolded as follows:

- a) Up-to-date literature review;
- b) Brainstorming regarding the foci, structure, situations, and elements of the scenarios, producing diagrams to systematically represent concepts related to an ordinary day of elderly women receiving social care;
- c) Development of a tool (template) to capture the human and robot capabilities for each scenario (the structure of the template has been briefly described in Section 1.2);
- d) Population of the tool with 32 scenarios for the 4 cultural groups and the corresponding robot capabilities that maybe play a key role in each scenario;
- e) Critical review of the scenarios and contributions from the whole consortium, in particular to guarantee that technological constraints are always taken into account, finally converging to a subset of interaction patterns that are realistically implementable on an off-the-shelf robot platform operating in a smart ICT environment;
- f) Iterative revision of the scenarios.



Diagram 1 Values and beliefs (Indian scenarios).

During the brainstorming (point b above) we have used the Indian cultural group as the vehicle for this process. Specifically, we have started by producing Diagrams 1, 2, 3, 4 to systematically represent concepts related to activities of an ordinary day of elderly women with an Indian background receiving social care. These diagrams were intended to provide the conceptual vehicles for the development of all the scenarios. First, we mapped out some key invisible pillars of the culture i.e., the values and beliefs around life, the person, care, health, illness and family (Diagram 1). Then we considered some conscious behaviours associated with health, care, avoidance of illness and quality of life (Diagram 2). We then mapped out the key areas of family and religion which we view as a mixture of conscious and subconscious elements (Diagram 3). Lastly we decided to divide the day into six sections to facilitate the mapping of most of the activities that may happen in an ordinary day of an older person receiving social care (Diagram 4). We have used the thinking behind the diagrams when constructing the scripts and scenarios (Appendix I). These (and other diagrams for different cultural groups) will also inform the work we shall undertake in the next phase of WP1 which is the development of guidelines for the design of a culturally competent robot.

Notice also that Diagrams 1, 2, 3, 4 use a formalism that resembles the typical formalisms for knowledge representation, where "bold arrows" indicate a hierarchical "is a" relationship and dashed arrows indicate a "property" relationship between concepts. Knowledge produced in WP1 using this formalism will be more easily encoded in the Cultural Knowledge Base developed in WP2, that will be accessible and automatically processable by the CARESSES robot in order to exhibit a culturally competent behaviour.



Brainstorming reveals to be a powerful method to aid our decisions on how to approach the development of the necessary scenarios in a way that is logical and represent reality (Osborne, 2007). To use a metaphor, culture can be viewed as an iceberg (Hall, 1997). It is important to describe what is above the water (the visible elements) but also capture what is below the water (the invisible or hard to see elements that are the most difficult to capture, but also the most important). In human terms, the visible elements are things such as food, dress, language, rituals and other cultural behaviours which a person is conscious of and an observer can see. But beneath or behind them there exist invisible values, beliefs, philosophical and religious principles that were developed through socialisation or immersion into a particular culture from a very young age. In our daily life we are not conscious of these cultural elements unless something happens which challenges and compromises them. Then, just like when the temperature of the sea is raised by even a fraction of a degree catastrophic consequences occur which affect the iceberg and the environment around it, the values and beliefs which have been inhabiting the subconsciousness raise up to the conscious level and become visible conscious behaviours.

If we return to the iceberg metaphor, the possible consequences of the melting ice need to be understood, prevented, managed, and responded to. We need to apply the same reasoning to the humans. By capturing both the visible and invisible (or subconscious) elements of a person's cultural identity we will be able to produce a culturally competent robot which will be better prepared to respond to the person it is assigned to.

Diagram 4 Mapping a day of an elderly person living in an assistive care facility.

The procedure described in points c, d, e, and f, required to establish procedures for collaborative working allowing for an effective cooperation between partners with a different background in health & social sciences and robotics, sometimes with different views and expectations on what a social assistive robot shall and can do in the CARESSES scenarios. Indeed, we think that this procedure might be considered as a **secondary outcome of Task 1.1**, as it may foster the definition of "best practices" for the collaboration of interdisciplinary consortiums in H2020 assistive robotics project.

To this end, and under the leadership of Middlesex University that initiated the process by defining the real needs of elderly people, all partners participated to a number of dedicated videoconference meetings from 1st February to 17th March (Figure 1). Videoconferences were required, among other things, to prepare and refine the template (point c), and to agree upon the key elements that each scenario table should include as a prerequisite for its future usage in the project.

Figure 1 CARESSES partners discussing about scenarios: screenshot from the "FlashMeeting" of 17th March. The tool allows for recording videoconferences, taking notes, etc.

Then the "Human section" of each table (orange part) has been filled by Middlesex University (Mrs Chaterjee, Mrs Smith, and Mrs Khan) and by Nagoya University (Mrs Yamada), by preparing also a draft of the Robot section (green part), that was submitted to robotic partners as a suggestion about what the robot shall/can do in each scenario (point d).

Third, each table has been uploaded on a Google drive repository (Figure 2), to allow robotic partners to collaborative work on the tables. Robotic partners revised the proposed robotic tasks and – when necessary - proposed alternative tasks to guarantee that technological constraints are always taken into account and added details about the motor, perceptual and verbal capabilities required. Softbank Robotics

Europe provided details about the Pepper APIs that are currently available to implement such capabilities (point e).

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 11 • B Z U A • 00 E E E I A 4 depending on culture (volume and tone of voice, distance, velocity, etc.) What the robot shall / can do in this scenario A1. Remind Mrs C that she is h (P6,P7,V3)E A2. Recommend dishes (P6,V4)E A3. Provide recipes (P6,V4)E A4. Walk with Mrs C as she goot and refrigerator (M6,M8,P) A5. Keep notes for Mrs C (P6) 4 A6. Locate things as needed (p dishes, kitchen tools.) (M2, A7. Bring things when needed drishes, kitchen tools.) (M2, A8. Ask Mrs C if she needs any A9. Place a phone call, saying " then asking Mrs C to talk (if A10. Store the information abot of the ingredients and rem (P6,V3,V8) H (how do we kit A11. Ask Mrs C if she is tired and for a while (P2,V1,V3)E A1. Ask Mrs C if she is the dard (M1,M2,M3,M5,M7,M8,P4 A14. Carry some food to the tab (M1,M2,M4,M5,M7,M8,P4 Left: Robot motor capabilities required Right: Corresponding API or M2. Grasp objects (A7,A13,A14 	U A → CO Image: I	e Tasks d give Mrs C paper and g notes (This does not to me - Another A4+A5: if the robot has ecipe (A3) then it knows gredients, so it can walk d ask (Y/N) if ingredient X dd make a list of the ones ble if objects are at fixed wn to the robot. the position of needed r above assumption) the normal Marcel Adds: " Chris Papadop S:01 PM Mar 10 - Indirect style of communication - silence when elder is talking From imported document Alessandro Saffiotti 1:21 AM Mar 9 Add: " From imported document Alessandro Saffiotti 1:22 AM Mar 9 Add: " Adds and the robot. Alessandro Saffiotti - XAM Mar 9 Add: " Add: " Alessandro Saffiotti - XAM Mar 9 - XAM Mar 9		
	A10. Store the information about the expected delivery of the ingredients and remind Mrs C about it. (P6,V3,V8) H (how do we know the delivery time?) A11. Ask Mrs C if she is tired and suggest to have a rest for a while (P2,V1,V3)E A13. 'Suggest A12. Ask Mrs C information about her favourite foods and food preparation (M9,V2,V5)E A13. 'Legendient's and remind Mrs C about it. (semi-lti: ideal observe the a "to the right", advanced situ (M1,M2,M3,M5,M7,M8,P4,P5) H A14. Carry some food to the table on a tray (M1,M2,M4,M5,M7,M8,P4,P5) H A14. 'Suggest M1. Coordinately move base/ arms/ hands (A13,A14) ALMotion	the screen close to Mrs C ypeout call to the shop. to call the grocery shop Mrs C how to lay the table y the robot should ction, and use terms like both of which require ation assessment) Mrs C, to prepare a tray weets and to put it on the Still hard).		
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Figure 2 CARESSES partners collaboratively refining scenario tables: screenshot of the Google drive repository with edits and comments.

Finally, all tables have been revised by iteratively performing steps from b to e.

4 How this deliverable will be used

First, deliverable D1.1 will be used in the next phase of WP1, which aims to develop guidelines for culturally competent robots. To help us develop the guidelines we will undertake a number of video recordings with women from the four cultural groups, based on the scenarios of this deliverable. These short video recordings will be analysed by our panels of experts of Transcultural Nursing and Culturally Competent Healthcare. The results from the analysis will be used to validate the assumptions we made in developing the scenarios and to firmly embed the development of the guidelines in the everyday reality of the older people in our chosen cultural groups (please also refer to the section below titled 'Next Steps').

Second, deliverable D1.1 will be used in technological Work Packages WP2, WP3, WP4, WP5 in order to start defining a subset of robot's capability to be developed and integrated in the system. As the scenarios are very rich and include a huge number of different situations and corresponding robot's

capabilities, research in technological Work Packages will start by assigning a priority to the situations/capabilities listed in scenario tables, by giving a higher priority to those situations / capabilities that are expected to produce a higher impact in terms of sensitivity to the user's needs, customs and lifestyle, improved quality of life of users and their caregivers, reduced caregiver burden. The final aim is to develop a system with a portfolio of different capabilities that is able to deal with as many situations as possible in a culturally competent way.

Finally, deliverable D1.1 will constitute a valuable resource to start designing the robot's experiment to be performed in the second half of the project (WP7) in order to test and evaluate the impact of CARESSES culturally competent solution.

5 Conclusions

5.1 Compliance with the DoA and corrective actions

According to the Description of Action (DoA), deliverable D1.1 should produce detailed scenarios:

The detailed scenarios are produced starting from original CARESSES case studies described in the proposal, by updating, refining, and expanding them. Detailed scenarios are described in a proper formalism that will be defined in the course of Task 1.1. In each scenario, interaction patterns that are prototypical of real-life situations are identified, by classifying the required robotic skills and taking into account technological constraints.

This deliverable complies with the principles which underpinned the description of actions (DoA) for D1.1. Detailed scripts and scenarios have been developed for four cultural groups. Whilst the original proposal included scripts and scenarios for three cultural groups (Greek/Greek Cypriot, English and Japanese), this deliverable deviates slightly for pragmatic reasons as explained in a previous section. Access to older people with Greek culture and heritage proved impossible within the care homes of our partner. Therefore instead of the Greek group, two Indian cultural groups have been included. Detailed scenarios for the chosen groups which describe the interaction patterns that are prototypical of real-life situations were identified, by classifying the required robotic skills and taking into account technological constraints.

5.2 Achievements

Deliverable D1.1, being the first one, as well as the foundation for the project, captured the imagination of the project partners who actively engaged with the development of the deliverable. We believe that this deliverable provided an excellent vehicle for partner communication and the development of a common platform for learning, sharing expertise, verification of understanding of the purpose and processes of the work to be done, the nature of the roles of each partner and so on. The procedure adopted might be considered as a secondary outcome of Task 1.1, as it may be the first step towards "best practices" for the collaboration of interdisciplinary consortiums in H2020 assistive robotics project.

However, the activity performed in the first months of WP1 in order to produce deliverable D1.1 also captured the interest of key players and stakeholders. The fact that this project is aiming to develop a

culturally competent robot, generated an enormous interest in the UK as well as international mass media and the aim and content of the work associated with deliverable D1.1 were widely reported.

5.3 Next steps

The next stage in WP1 involves the development of guidelines for culturally competent robots (T1.2).

We are currently seeking ethical approval for the field work which we will undertake in the Advinia care homes in UK and the HISUISUI care home in Japan. We are also arranging - with our care home partner Advinia and with HISUISUI - to visit their homes in order to select one that meets the criteria for the field work.

The field work will entail short video recordings of older people and their caregivers during different times in the day, to capture encounters similar to those described in the scenarios.

As planned in the DoA, we aim to ground the assumptions made in the scenarios, into real-world events and observations, which require the robot's cultural competence to undergo a process of iterative refinement on the basis of the cultural behavioural cues collected from the video recorded encounters between older people and their caregivers. Specifically, having identified and verified the relevant verbal and non-verbal behavioural cues with the help of expert panels, we shall update and refine the prototype robot's cultural competence. In doing this, a great care will be paid to eliminate any stereotypic notions present. This process shall ultimately produce guidelines describing how culturally competent robots are expected to behave in assistive scenarios. The knowledge acquired in all these steps, both through comprehensive literature reviews on the topics and the video recorded encounters, shall be formalized using tools for knowledge representations, as the availability of formal languages for knowledge representation constitutes the basis for the robot to exhibit autonomous reasoning, planning and acting skills depending on such knowledge. Also, in the perspective of a commercial exploitation, it will allow the development of robots that are able to autonomously acquire information and update their own knowledge about the cultural context in which they are operating and ultimately to re-configure their attitude towards the user.

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7 APPENDICES

Appendix I consists of four scripts and thirty two scenarios (please see the Summary below for more details).

APPENDIX I

Summary

1. MRS CHATERJEE – SCRIPT
1.1 Mrs Chaterjee – Morning Routine, Breakfast
1.2 MRS CHATERJEE – MORNING ROUTINE, DRESSING
1.3 MRS CHATERJEE - PRE LUNCH ROUTINE, READING/AUDIO/TV/MUSIC
1.4 MRS CHATERJEE - PRE LUNCH ROUTINE, PRAY
1.5 MRS CHATERJEE - LUNCH ROUTINE, EATING
1.6 MRS CHATERJEE - AFTER LUNCH ROUTINE, NAP AND MEDITATION
1.7 MRS CHATERJEE - AFTER LUNCH ROUTINE, EXERCISE AND AFTERNOON TEA
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1. Mrs Chaterjee – Script

<u>Mrs Sonali Chaterjee</u> is a 75 year old Indian, Hindu, lady from West Bengal. She was born in a city close to Kolkata and after completing her engineering degree in India she was married ¹ and immigrated to the UK. Mrs Chaterjee ² is a Bengali <i>Brahmin</i> ³ . She highly values tradition and education and she likes to be treated with politeness and respect. Even though she was educated, after marriage she devoted her energy in raising her family. She has a son and a daughter. Her husband died a few years ago. Both her children live relatively close and she sees them often. Mrs Chaterjee has high cholesterol and a thyroid problem for which she takes regularly medication ⁴ . She also believes in homeopathy therefore she is also taking regularly some ayuverda drops ⁵ for her thyroid problem. At the age of 30 she was diagnosed with retinitis pigmentosa (a genetic disease that affects the eyes) ⁶ . Through the years she started developing tunnel vision (losing her side vision) and she is slowly losing the ability to distinguish colours. In the last year her eye condition deteriorated and she had to move into a care home.	 She had an arranged marriage Usually a person's last name provides some initial information regarding the part of India they are coming from and in which cast they belong Brahmins belong in the high cast Respect to western medicine Ayurveda is a system of medicine with roots in the India subcontinent Retinitis pigmentosa is a genetic disease that affects the eyes. This is a progressive disease for which unfortunately there is no cure Common to have more than one helpers among middle class families Respectful way to greet an elderly loved one
Her eye condition is creating a lot of stress and problems in her everyday life. Even though she didn't have a career she worked occasionally, people respected her. She would have help for the housework and cooking ⁷ but she would always make sure that everything was done properly. She always liked to have the oversight of every activity, and everything had to come to her first for approval (e.g. inspect the vegetables, fish and meat for freshness). She cannot do that any more and that frustrates her but she will not always express it. She also liked to cook for her family but that also is getting difficult. She is now having trouble cutting vegetables; she will frequently break or spill things and then feel embarrassed. She likes to walk but now she hardly goes outside because she is scared of falling. She cannot always see the steps or uneven surfaces. A few weeks ago her grandchild came to visit and bend to touch her feet ⁸ but she couldn't see her and almost knocked her over. She was very sad about that.	

Today she woke up with a little bit of cold. She calls her carer to help her	9.Putting ginger in tea is believed to relief cold symptoms
make a hot drink. She would like to have some hot tea with ginger ⁹ . She also	10. Similarly with chewing cloves, especially when you have a
asks for some cloves to chew ¹⁰ , they are good for the sore throat. Her good	sore throat.
friend, Lila, comes over. She is still in her nightdress and robe but insists that	11. Visitors are welcome and need to be treated nicely, offering a
she comes in. She needs to come in and have at least a cup of tea. ^{11,12}	snack or tea or coffee.
She goes in and gets dressed quickly. They start chatting in Bengali ¹³ . Her friend looks at her and comments on how beautiful she looks in her shawl ¹⁴ . She is cold; she needs something over her shoulders. She asks her carer to bring out some snacks and sweets ¹⁵ . She also asks her to make sweet masala tea ¹⁶ , just the way her friend likes it. They sit comfortably and continue to chat. Her friend has a daughter around 25 and she is getting worried about her marriage ¹⁷ .	12. Close friends may hug but it is not necessary. They will do a Namaste (hand gesture), take their shoes off and leave close to the door and then come in. To perform Namaste, place the hands together in front of the heart, close the eyes, and bow the head. It can also be done by placing the hands together in front of the third eye, bowing the head, and then bringing the hands down to the heart. This is an especially deep form of respect. 13. Common to talk with native language
After her friend leaves she goes to her bedroom to properly dress up. She	14 Big scarf if winter possibly woollen
has a beautiful selection of saris (silk, cottons and from different parts of	15. Products nurchased from a local Indian shon
India) but after her husband died she only wears plain ones (predominantly	16 Indian way of making teg hoil water milk some species and
white with a colour border) ¹⁸ . She chooses one that her daughter bought	tea leaves
her the last time ¹⁹ they went shopping together. She could also wear a pair	17. Role of astrology
of trousers and a blouse, or a salwar kameez ²⁰ but she would like her granddaughter to see her in a sari and wearing a sari makes her feel better dressed. She opens her jewellery box and chooses a short simple necklace	18 Dresses and different ways of dressing. In addition, ways of
	dressing if you are mourning or widow (old widow, younger etc)
	19. Way of showing her love and how important are her children
that her husband presented her on a wedding anniversary. She has a large	20. Salwar kameezs are worn mostly by Muslim ladies but
selection of jewellery but they are now kept in a safety box (bank) and she	Hindus also chose to wear especially younger because they are
only has a small selection at home (locked away and kept in a secret place in	easier to wear and comfortable.
iner closet, only her children know where). She has already given a lot of her	21. Importance of gold, for her security but also for the following
ber grandchildren ²¹	generations passing it on
	22. Iron bangles usually the symbol of marriage that she cannot
She will comb her hair nicely and just keep her stab earrings and two plain	take it off. In other parts of India a necklace with black and gold
bangles in each hand ²² . She remembered dressing up She would choose a	bids is the symbol instead of a wedding ring.
beautiful colourful sari, she would put on a short and long necklace, a bindi ²³	23. Forehead decorations that all women can wear.
and her sindur ²⁺ , and then of course make up and her favourite perfume.	24. Red powder spread at forehead but only for married women.
colour her hair which she does not keen very long ²⁵ She used to colour her	25. Lona hair a symbol of beauty and youth.
hair herself but now she needs to call a hairdresser/beautician ²⁶ home every	26 A heautician from the community will know to use herball
6-8 weeks.	henna colouring and possibly provide other services such as head

After dressing Mrs C will light a scented stick to Lord Ganesha ²⁷ and pray for	massage or a facial or hand massage for less money.	
the removal of obstacles and health for all her family/friends ²⁸ . In the corner of her bedroom, she has a small table with a couple of small statues of Canasha. Shive and Durga ²⁹	27.The 'elephant' God the patron of art and sciences and the removal of obstacles	
The table is covered with a colourful cloth and on it there are a small tray with a small bell, a candle holder and an incense stick holder. She will spend there a few minutes, standing or sitting on the floor, with her hands in	28. Knowledge of all close family/friends birthdays, wedding anniversaries, death anniversaries, rice ceremonies, etc. Mrs C makes an effort to always remember these special occasions and to pray for blessings of the family/friend's occasion	
'namaste' ³⁰ . Today she will not make a 'puja' ³¹ . It is now mid-morning, Mrs C finished her exercise and she would like to have a cup of tea and listen to the news. She will make a simple cup of tea	29. Different parts of India, place more importance to different gods. It is not uncommon even for Christian Indians to also have statues like that in their home or a small Buddha. This does not apply to Muslim Indian families.	
along with her husband but now she will put the radio on and listen to the news. She likes to put on BBC or the Bengali channel, or the Indian TV ³³ channel news. Then she will switch on her audio book. She will listen for 20 minutes and then she will talk with her children on the phone. They have their regular time, she or they will call every day.	30. 'Namaste', place the hands together in front of the heart, close the eyes, and bow the head. It can also be done by placing the hands together in front of the third eye, bowing the head, and then bringing the hands down to the heart. This is an especially deep form of respect.	
After her husband died and because of her health problems (thyroid and high cholesterol) she has a light lunch. Usually dhal ³⁴ and fish curry ³⁵ . She has prepared enough dhal and fish curry for lunch and dinner and has kept them in two containers. Instead of bhat ³⁶ she will make two chapatis ³⁷ or maybe four and keep two of them for dinner. She takes out the ingredients and makes the dough. Then on the kitchen counter or table she will use the rolling pin to make perfect round chapatis. She will heat a frying pan and	31. 'Puja' An offering to Gods made during prayer 32. Knowing the Indian way of making tea	
	33. Indian TV channels /radio	
	34. lentils	
	35. Bengalis are very fond of fish curry and they prefer to have it every day if possible.	
cook the chapatis without using any oil. ³⁸	36. Rice (basmati)	
She will put in two smaller bowls dhal and fish curry and warm them up. She will sit at the table and with her left hand, she will first serve the dhal, then the fish curry. She likes eating with her hand (right hand only, serving with left) ³⁹ . She may have some cucumber also and her homemade mango chutney. She will then have a glass of water and her medication for cholesterol.	37. Round bread made of flour and cooked on the fire.	
	38. Containers, rolling pins , etc are brought from India	
	<i>39. Common way of eating. Indians actually say that you cannot enjoy the food if you don't eat with your hand.</i>	
After her light lunch now she is sitting comfortably in her armchair in the living room. The radio is on at the background. She has her feet on a stool and she is covered by her favorite soft blanket. She closes her eyes and		

meditates ⁴⁰ for a while. She soon falls asleep. After half hour she wakes up refreshed and looks for her slippers; she puts them on and takes a look outside. It is not raining and she has been told by her carer that it is not too cold outside today. She decides to go for a short walk in the garden. She struggles to put her coat on and grabs her walking stick which is hanging by the door.	40. She may be holding a Japa Mala (praying string of beads) made out of 108 beads and she may recite the name of the God that she believes in (eg Guajarati's most probably Krishna, Bengalis most probably Durga) or She may say slowly the words: Buddham Sharanam Gacchami (a Buddhist mantra) 41. Boils the water, puts in some spices such as cinnamon and a
After her nice walk, it is time for some tea. She takes the time to make a nice cup of tea ⁴¹ . She likes to have her tea with some tea biscuits or cake ⁴²	couple of cloves, some sugar, milk and tea leaves. She lets it boil and then closes the heat and lets it brew.
brought by her son in his last visit.	42. Fruit cake, made with different dried fruits and almonds.
It is late afternoon now and her son just popped in to visit.	43.Ways of calling mother: Ma or Ama or Ai,or Mata (depending on language)
He calls her 'Ma' ⁴³ , bends to touch her feet, she touches his head, and they hug ⁴⁴ . He takes off his shoes ⁴⁵ , leaves them close to the door and they go in.	44.Greetings
They sit on the sofa close together. They start talking about his day. She asks	45.Entering the house
about his work and the children. He asks of what she did since he last visited. He shows her some of the latest photos on his smartphone from the children and family. He brings her glasses. They talk, and laugh. Then they take a selfie together and he also takes a photo of her. Before he leaves he helps her put her coat and hat on and takes her for a walk in the garden. He tells her that walking and exercising is good for her.	 46. Indian festival of lights, usually in October or November, one of the biggest festivals, celebrating the light over darkness, the good over evil. 47. Bengalis like to have a 'full' table (many dishes). Fish is very important. Hilsha fish is a fresh water river fish can be eaten all
She asks him when he will visit her again and he reminds her that next week is Diwali ⁴⁶ so he will be coming the day before Diwali to take her so that she can celebrate it with the family.	year around, is full of bones but especially loved.
He has to go now, they hug, she touches his head, gives him her blessing, and they say goodbye.	
On Sunday her daughter, son in –law and granddaughter will be visiting for dinner. Now she needs to plan for dinner. She wants to make dahl (lentil dish), a cauliflower or maybe bindhi curry, (depends on what she can find), a simple chicken with potatoes curry and of course her signature mustard fish curry ⁴⁷ . She needs to call the Indian grocery shop and place an order. She also needs to order the fish. She wants to make Hilsha fish and for that she needs to call another store. Her granddaughter is still too small to have Hilsha fish but it is her favourite dish and she cannot not have Hilsha. She asks her carer to help with the organization. (Calling the stores, ordering.	

making sure she has all the spices she will need, the specific cooking oil) Oh she also needs to order sweets, some sandesh and rasgulla ⁴⁸ .	48. Typical Bengali sweets 49. Auntie
The carers used to call her Mrs Chaterjee when she first moved in the care home, but now they call her Mashi ⁴⁹ , a respectful way to address older Hindu women.	

1.1 Mrs Chaterjee – Morning Routine, Breakfast

Scenario name	Mrs Chaterjee – Morning routine, Breakfast		
Time of the day	Morning		
General Description	 <> Mrs C got up as usual very early in the morning (around 7 am) and had her cup of tea with a tea biscuit. She used to read the newspaper along with her husband but now she will put the radio on and listen to the news. She likes to put on the Bengali channel, or the Indian TV channel news. Then she may have cereal, or some fruit or porridge or she may have a chapatti with leftover vegetable curry¹. She loves English breakfast² but because of her cholesterol problem she tries to avoid eggs/sausages etc It is not uncommon to have some leftover food for breakfast It is not uncommon to have some leftover food for breakfast Common foods for breakfast (tea, toast, cereal/porridge, boiled eggs, fried/grilled bacon, sausage, baked beans, tomatoes,) 		
Functional areas of the house involved	F1. Kitchen		
Relevant objects involved	 O1. Plates/glasses O2. Cup O3. Cutlery O4. Tea, biscuits and other foods/drinks O5. Table O6. Chair O7. Radio/TV 		
Relevant persons (in addition to user and caregiver)	B1. No-one		
What a human (formal or informal) caregiver shall / can do in this scenario	 H1. Say Good morning and ask how she is doing H2. Ask what Mrs C would like for breakfast H3. Recommend different options H4. Get all the ingredients for making breakfast H5. Use the appropriate plates/glasses /utensils H6. Cook breakfast/ warm last night's curry H7. Serve breakfast H8. Ask whether she would like to have tea or coffee or juice 		

	H9.	Make tea of coffee		
	H10.	Switch on the radio or TV		
	H11.	Ask Mrs C what radio/TV channel she would like to listen		
	H12.	Talk about the news and keep Mrs C company		
	H13.	Remind her about her medication if she need to take any		
Cultural knowledge	C1.	Mrs C has lived in the UK for many years so she may be fond	of English breakfast or she may like	
involved (top level		porridge, cereal, juice, tea, etc		
concepts in the Cultural	C2.	It is not uncommon to have some leftover Indian food for br	eakfast	
Knowledge hierarchy)	C3.	English breakfast dishes and preferences		
	C4.	Names of different English breakfast dishes		
	C5.	Knowledge of English cooking		
	C6.	Names of different English and Indian radio channels and pro	ogrammes	
Which "qualitative"	D1.	Awareness of Mrs C preferences for breakfast (could be a m	ixture of English and Indian dishes)	
caregiver behavior is	D2.	Awareness of where Mrs C likes to take her breakfast		
expected to be culturally	D3.	Preferences of news/radio channels		
dependent				
Which behavior is	E1.	Polite and soft volume of voice		
"quantitatively" different	E2.	Moving about at slow speed		
depending on culture				
(volume and tone of voice,				
distance, velocity, etc.)				
Left: What the robot shall /	A1.	Greet Mrs C, saying "Good Morning" and asking her how	A4'+A5' Tell Mrs C the positions of	
can do in this scenario		she is feeling today (M5,M9,P1,P2,P4,V2,V6) [E]	needed objects in the environment,	
Right: Alternative tasks	A2.	Provide a list of choices that Mrs C can have for breakfast	knowing them a priori, or detecting	
		(P7,V3,V7) [E]	them by using markers.	
	A3.	Praise on eating a healthy and balanced diet (V4,V6) [E]	A6'. Locate and indicate objects	
	A4.	Locate objects as needed (plates, glasses, cups)	needed for preparing the tray,	
		(M4,M6,P5,P6) [Semi-H]	knowing their position in the	
	A5.	Bring objects as needed (plates, glasses, cups)	environment, or using markers	
		(M1,M2,M5,M6,P1,P5) [H]	A7'. Suggest Mrs C to bring the tray	
	A6.	Prepare a tray with food (M1,M2,P6) [H]	with food to the table	
	A7.	Bring the tray to Mrs C to the table	A7". Permanently fasten a tray to the	
		(M1,M2,M3,M4,M5,M6,P1,P5,P6) [H]	robot's chest to bring objects	
	A8.	Remind her to take her medication if needed (P7,P9,V3) [E]	A9'. Ask Mrs C if she wants to hear	
	A9.	Respond to her request to hear the news on the radio	the news. If yes, connect to her	

		(M7,M8,V4) [H->E]	favorite (known a priori) internet
	A10.	Keep company to Mrs C while eating (P3,P8,V1,V2,V4) [E]	radio channel.
	A11.	Comment on her dietary choices (M9,P3,P7,V4,V6) [H]	A9". Ask Mrs C if she wants to hear
	A12.	Inform Mrs C if she has any text /telephone messages and	radio and the type of music. Then,
		reads them to her (M8,P7,V7) [E]	reproduce the selected radio channel
			A11'. Provide general dietary advices
			A12'. Check email or events from apps
			such as Whatsapp / Viber
Left: Robot motor	M1.	Grasp objects (A5,A6,A7)	- no dedicated module, it could be
capabilities required			achieved with external libraries
Right: Corresponding	M2.	Carry lightweight items (A5,A6,A7)	- feasible if payload is <300 g
Pepper API (if any)	M3.	Carry heavyweight items (A7)	- not feasible
	M4	Navigate autonomously in the house $(A4 A7)$	- Al Navigation
	M5	Reach a target / nerson (A1 A5 A7)	- Al VisionRecognition
	1113.		AI CloseObjectDetection
			Al Navigation
	Мб	Avoid upexpected static or moving obstacles / persons	
	1010.	(A4,A5,A7)	Alviolion
	M7.	Turn on radio / TV /cassette player (A9)	- ALAudioPlayer
			For external devices, It could be
			achieved with a specific
			communication protocol
	M8.	Operate appliance (by communicating with smart	- It could be achieved with a specific
		environment) (A9,A12)	communication protocol
	M9.	Show feelings (A1,A11)	- ALLeds, ALRobotPosture,
			ALAnimationPlayer
Left: Robot perceptual	P1.	Locate persons (distance and position) (A1,A5,A7)	- ALPeoplePerception
capabilities required	P2.	Recognize emotions (A1)	- ALMood
Right: Corresponding	P3.	Recognize actions (A10,A11)	- no dedicated module, it could be
Pepper API (if any)			achieved with external libraries
	P4.	Recognize persons / faces (A1)	- ALFaceDetection
	P5.	Recognize obstacles / uneven ground (A4,A5,A7)	- ALLaser, ALSonar
	P6.	Recognize/ Locate items (A4,A6,A7)	- ALVisionRecognition
	P7.	Retrieve / store information (A2.A8.A11.A12)	- ALMemory
	P8.	Recognize dialogue context (A10)	- ALSpeechRecognition
	P9.	Keep track of time (A8)	- no dedicated module, it could be

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			achieved with different solutions
Left: Robot verbal	V1.	Ask Yes/ No questions (A10)	- ALDialog, ALSpeechRecognition,
capabilities involved			ALTextToSpeech, ALTabletService
Right: Corresponding	V2.	Ask multiple choice questions (A1,A10)	- ALDialog, ALSpeechRecognition,
Pepper API (if any)			ALTextToSpeech, ALTabletService
	V3.	Suggest / remind (A2,A8)	 ALDialog, ALTextToSpeech,
			ALTabletService
	V4.	Context dependent chat (A3,A9,A10,A11)	 ALDialog, ALSpeechRecognition,
			ALTextToSpeech, ALTabletService
	V5.	Greet (A1)	 ALDialog, ALTextToSpeech
	V6.	Encourage/ praise (A3,A11)	 ALDialog, ALTextToSpeech,
			ALTabletService
	V7.	Report information (A2,A12)	 ALMemory, ALTextToSpeech,
			ALTabletService
Which "qualitative" robot	R1.	Polite way of asking and interacting	
behavior is expected to be	R2.	Waits for her instructions	
culturally dependent	R3.	Awareness of Mrs C eating preferences	
	R4.	Awareness of where Mrs C likes to take her breakfast	
	R5.	Preferences of news/radio channels	
Which behavior is	T1.	Speaks with soft tone	
"quantitatively" different	T2.	Speaks in low volume	
depending con culture	Т3.	Walks in low speed	
(volume and tone of voice,			
distance, velocity, etc)			

1.2 Mrs Chaterjee – Morning Routine, Dressing

Scenario name	Mrs Chaterjee – Morning routine, Dressing			
Time of the day	Morning			
General Description	<> Mrs C has a beautiful selection of saris (silk, cotton and from different parts of India) but after her husband died she only wears plain ones (predominantly white with a colour border) ¹ . She chooses one that her daughter brought her the last time ² they went shopping together. She could also wear a pair of trousers and a blouse, or a salwar kamchim ³ but she would like her granddaughter to see her in a sari and wearing a sari makes her feel better dressed. She opens her jewelry box and chooses a short simple necklace that her husband bought her on a wedding anniversary. She has a large selection of gold jewelry but they are now kept in a safety box (bank) and she only has a small selection at home (locked away and kept in a secret place in her closet, only her children know where). She has already given a lot of her jewelry to her daughter and daughter in law but she is keeping the rest for her grandchildren ⁴ . She will comb her hair nicely and just keep her stab earrings and two plain bangles in each hand ⁵ . She remembered dressing up She would choose a beautiful colourful sari, she would put on a short and long necklace, a bindi ⁶ and her sindur ⁷ , and then of course some make up and her favourite perfume. She does not wear much make up these days as she cannot see well enough to apply it but at least she continues to colour her hair herself but now she needs to call a hairdresser/beautician ⁹ home, every 6-8 weeks. <>	 dresses and different ways of dressing. In addition, ways of dressing if you are mourning or widow (old widow, younger etc) way of showing her love and how important her children are to her salwar are worn mostly by Muslim ladies but Hindus also chose to wear especially younger people because they are easier to wear and comfortable. importance of gold, for her safety but also for the following generations passing it on iron bangles are usually the symbol of marriage that she must not take off. In other parts of India a necklace with black and gold bids is the symbol of marriage instead of an iron bangle. forehead decorations that all women can wear. red powder spread at forehead but only for married women. long hair a symbol of beauty and youth a beautician from the community will know to use herbal/ henna colouring and possibly provide other services such as head massage, or a facial or hand massage, threading (for hair removal) for less money 		
house involved	F1. Bedroom – Wardrobe			
nouse involved	F2. Bearoom – Wardrobe			

	F3.	Bedroom – Drawers
	F4.	Bedroom - dressing table
Relevant objects involved	01.	Saris, blouses, petticoats, shawls
	02.	Jewels (necklaces and bangles)
	03.	Head colours, and bindis of different shapes and colours that are put as decorations on the
		forehead (usually round & red)
	04.	Perfume
	05.	Comb
	06.	Make up
Relevant persons	B1.	No-one
(in addition to user and		
caregiver)		
What a human (formal or	H1.	Help Mrs C to wear her sari, if she needs help (e.g., by holding, handing, and fastening)
informal) caregiver shall /	H2.	Praise Mrs C for her look and beautiful saris
can do in this scenario	H3.	Suggesting to wear jewels or to take some perfume, making statements about favourite colours,
		family, hobbies, traditions of India
	H4.	Help Mrs C to choose sari
	H5.	Help her find the sari's matching blouse and matching petticoat (underskirt)
	H6.	Bring comb
	H7.	Reminder her to call the hairdresser to make an appointment
	H8.	Recommend to wear a shawl (colour and type)
Cultural knowledge	C1.	Hindu morning routine
involved (top level	C2.	Hindu dressing and accessories
concepts in the Cultural		
Knowledge hierarchy)		
Which "qualitative"	D1.	Distance kept by caregiver from Mrs C is a parameter that depends on culture
caregiver behavior is	D2.	The way of praising depends on culture and current emotion
expected to be culturally	D3.	Holding pieces of clothes or jewellery is an action to be executed only for cultures where dressing
dependent		requires many "accessories"
	D4.	Dressing is very important in Hindu culture; the time devoted to this activity will be longer than in other culture
	D5.	Dresses, jewels, perfume and so on have different names in different cultures
	D6.	Remember her favourite sari and colour and which saris were presents from her children

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Which behavior is	E1.	Polite and soft tone of voice	
"quantitatively" different	E2.	Gentle reminder about the hairdresser	
depending con culture	E3.	Not rushing Mrs C	
(volume and tone of voice,			
distance, velocity, etc.)			
Left: What the robot shall /	A1.	Locate objects if needed (sari, box jewels, comb, shawl)	A1'+A2'. Tell Mrs C the location of the
can do in this scenario		(M5,M8,P5,P6) [H]	needed objects, knowing their
Right: Alternative tasks	A2.	Bring objects if needed (sari, box jewels, comb, shawl)	positions in the environment, or by
		(M2,M3,M4,M5,M6,M8,P1,P5) [H]	using markers
	A3.	Recommend sari and shawl (P4,P7,V1,V2,V3) [E]	A2". Permanently attach a tray to the
	A4.	Open wardrobe with saris/clothes	robot's chest to bring objects
		(M1,M2,M6,M7,M8,M9,P5,P6) [H]	A4'+A6'. Bring a hanger (on wheels)
	A5.	Ask Mrs C if she needs help while getting dressed	close to Mrs C, and then bring it back
		(P2,P4,V1,V4) [E]	to its place again.
	A6.	Help Mrs C to wear her sari, by holding it	A4". Open the wardrobe, by
		(M1,M2,M3,M6,M8,P1,P2,P5,P6) [E/H]	controlling its sliding doors in the
	A7.	Switch on/off lights when asked (M10) [H]	smart environment
	A8.	Provide privacy to Mrs C (M5,P4) [E]	A7'. Connect to automatic controls of
	A9.	Show interest and ask information about Hindu traditional	lights.
		dresses (M11,P7,V1,V2,V4) [E]	A10'. Talk with Mrs C, asking
	A10.	Make recommendations (jewels,perfume,traditions of	questions related to the context and
		India, weather information) (P7,P8,V3,V4,V5) [E]	making appropriate recommendations
	A11.	Praise Mrs C for her look (M11,P3,V4,V5) [E]	
	A12.	Remind Mrs C to call the hairdresser (P7,V3,V4) [E]	
Left: Robot motor	M1.	Coordinate move base/ arms/ hands (A4,A6)	- ALMotion
capabilities required	M2.	Grasp objects (A2,A4,A6)	- no dedicated module, it could be
Right: Corresponding			achieved with external libraries
Pepper API (if any)	M3.	Carry lightweight items (A2,A6)	- feasible if payload is <300 g
	M4.	Carry heavyweight items (A2)	- not feasible
	M5.	Navigate autonomously in the house (A1,A2,A8)	- ALNavigation
	M6.	Reach a target / person (A2,A4,A6)	- ALVisionRecognition,
			ALCIOSeObjectDetection,
			ALNavigation
	M7.	Pull objects (A4)	- no dedicated module, it could be
			achieved with external libraries

	N/O	Avoid uppy posted static or moving obstacles / porcons	AllMation
	1018.	(A1,A2,A4,A6)	- ALMOTION
	M9.	Open doors / windows (by communicating with smart	- It could be achieved with a specific
		environment) (A4)	communication protocol
	M10.	Operate appliance (by communicating with smart	- It could be achieved with a specific
		environment) (A7)	communication protocol
	M11.	Show feelings (A9,A11)	- ALLeds, ALRobotPosture,
			ALAnimationPlayer
Left: Robot perceptual	P1.	Locate persons (distance and position) (A2,A6)	- ALPeoplePerception
capabilities required	P2.	Recognize posture, gesture, movements (A5,A6)	- no dedicated module, it could be
Right: Corresponding			achieved with external libraries
Pepper API (if any)	P3.	Recognize emotions (A11)	- ALMood
	Ρ4.	Recognize actions (A3,A5,A8)	- no dedicated module, it could be
			achieved with external libraries
	P5.	Recognize obstacles / uneven ground (A1,A2,A4,A6)	- ALLaser, ALSonar
	P6.	Recognize/ Locate items (A1,A4,A6)	- ALVisionRecognition
	P7.	Retrieve / store information (A3,A9,A10,A12)	- ALMemory
	P8.	Recognize weather/ temperature (A10)	- no dedicated module, it could be
			checked the broadcast on internet
			or by communicating with the smart
			environment
Left: Robot verbal	V1.	Ask Yes/ No questions (A3,A5,A9)	- ALDialog, ALSpeechRecognition,
capabilities involved			ALTextToSpeech, ALTabletService
Right: Corresponding	V2.	Ask multiple choice questions (A3,A9)	- ALDialog, ALSpeechRecognition,
Pepper API (if any)			ALTextToSpeech, ALTabletService
	V3.	Suggest / remind (A3,A10,A12)	 ALDialog, ALTextToSpeech,
			ALTabletService
	V4.	Context dependent chat (A5,A9,A10,A11,A12)	- ALDialog, ALSpeechRecognition,
			ALTextToSpeech, ALTabletService
	V5.	Encourage/ praise (A10,A11)	 ALDialog, ALTextToSpeech,
			ALTabletService
Which "qualitative" robot	R1.	Way of dressing	
behavior is expected to be	R2.	Type of clothes depending for the occasion	
culturally dependent	R3.	May need to turn to face the wall or leave the room when	Mrs C is changing
	R4.	Provide privacy	

Which behavior is	T1.	Speaks with soft tone
"quantitatively" different	T2.	Speaks in low volume
depending con culture	Т3.	Walks in low speed
(volume and tone of voice,	T4.	Stands not too close to Mrs C unless helping her with something
distance, velocity, etc)	T5.	Frequency of reminders is not too high

1.3 Mrs Chaterjee - Pre Lunch Routine, Reading/Audio/TV/Music

Scenario name	Mrs Chaterjee - Pre Lunch routine, Reading/audio/tv/music		
Time of the day	mid-Morning		
General Description	<> it is now mid-morning, Mrs C finished her exercise and she would like to have a cup of tea and listen to the news. She will make a simple cup of tea (using tea bag) not the Indian way ¹ . She used to read the newspaper along with her husband but now because of her eye problems, she will put the radio on and listen to the news. She likes to put on BBC or the Bengali channel, or the Indian TV ² channel news. Then she will listen for a while to her talking book. She will then talk with her children on the phone They have their regular time she or they will call every day.		
Functional areas of the	F1. kitchen		
house involved	F2. Bedroom or living room (depending where is the radio or TV and her chair)		
Relevant objects involved	01. TV		
	O2. Radio		
	O3. Talking/audio book		
	O4. Remote		
	O5. Phone		
	O6. Armchair		
	O7. Tea bags		
	O8. Tea cup		
	O9. Kettle		
Relevant persons	P1. No-one		
(in addition to user and			
caregiver)			
What a human (formal or	H1. Help her switch on the radio or TV and find the correct channel (channel of her choice)		
informal) caregiver shall /	H2. Read to her or if she is having an audio book start it from where she left off.		
can do in this scenario	H4. Bring her phone		
	H5. Reminder her to call or call family member		
	H6. Carry her tea cup in the living room		

CARESSES

Cultural knowledge	C1.	Appreciate the importance of Indian music and Indian TV programmes.	
involved (top level	C2.	Understand the importance of keeping in regular contact with her family.	
concepts in the Cultural			
Knowledge hierarchy)			
Which "qualitative"	D1.	Asking politely if she will need help with any of the activities	(starting the TV or the radio, finding the
caregiver behavior is		channel)	
expected to be culturally	D2.	Reminding her politely to call her daughter	
dependent	D3.	Bring items and offering them gently	
	D4.	Privacy when talking with family	
Which behavior is	E1.	Polite and soft tone of voice	
"quantitatively" different	E2.	Move slowly and gently in the house	
depending on culture			
(volume and tone of voice,			
distance, velocity, etc.)			
Left: What the robot shall /	A1.	Ask Mrs C how she feels and if she wants a cup of tea	A3'. Connect to internet radio and let
can do in this scenario		(P1,P2,P4,P7,V1,V2) [E]	Mrs C listen to her favorite radio
Right: Alternative tasks	A2.	Remind Mrs C that her TV show is on (P7,P8,V3,V7) [E]	program via the Pepper's
	A3.	Switch on/off TV/radio and put the correct	loudspeakers.
		channel/volume (M7,M8) [H]	A3". Connect to internet radio TV and
	A4.	Locate objects as needed (remote, tea bags, cup, phone)	let Mrs C watch her favorite TV
		(M4,M6,P5,P6) [H]	program via the Pepper's screen.
	A5.	Bring objects as needed (remote, tea bags, cup, phone)	A3". Connect to internet newspaper,
		(M1,M2,M4,M5,M6,P1,P5) [H]	and read the titles to Mrs C. After
	A6.	Prepare a tray with tea cup (M1,M2,P6) [H]	each title, ask Mrs C if she wants to
	A7.	Bring the tray to Mrs C (M1,M3,M4,M5,M6,P1,P5,P6) [H]	hear the full story.
	A8.	Read Mrs C her audiobook (M9,V3,V5) [E]	A4'+A5'. Tell Mrs C the positions of
	A9.	Comment about how enjoying is reading and ask Mrs C to	needed objects in the environment,
		choose her next book from the catalogue	knowing them a priori, or detecting
		(M9,P2,P7,V4,V6,V7) [E]	them by using markers.
	A10.	Keminu IVITS C to call her daughter (P3,P7,V3,V6) [E]	Ab +A/. Locate and indicate objects
	AII.	Ask IVITS C II She wants to use skype/facetime instead	needed for preparing the tray,
	412	(VZ,V3)[E]	knowing their position in the
	A12.	Prace a skype/phone call, saying please hold on and then	environment, or using markers. Then
			food to the table
			tood to the table

			A5"+A6"+A7". Permanently attach a
			tray to the robot's chest to bring
			objects
Left: Robot motor	M1. Gras	sp objects (A5,A6,A7)	- no dedicated module, it could be
capabilities required			achieved with external libraries
Right: Corresponding	M2. Carr	ry lightweight items <mark>(A5,A6)</mark>	- feasible if payload is <300 g
Pepper API (if any)	M3. Carr	ry heavyweight items (A7)	- not feasible
	M4. Nav	igate autonomously in the house (A4,A5,A7)	- ALNavigation
	M5. Read	ch a target / person (A5,A7)	- ALVisionRecognition,
			ALCloseObjectDetection,
			ALNavigation
	M6. Avoi	id unexpected static or moving obstacles / persons	- ALMotion
	M7 Turr	n on radio / TV /cassette player (A3)	- Al AudioPlayer
	Wiy. Turi		For external devices. It could be
			achieved with a specific
			communication protocol
	M8 One	erate appliance (by communicating with smart	- It could be achieved with a specific
	envi	ironment) (A3 A12)	communication protocol
	M9 Show	w feelings $(A8 A9)$	- Alleds Al RobotPosture
	1013. 3110		Al AnimationPlayer
Left: Robot perceptual	P1 Loca	ate persons (distance and position) (A1 A5 A7)	- Al PeoplePercention
canabilities required	P2 Reco	ognize emotions (A1 A9)	- Al Mood
Right: Corresponding	P3 Reco	$\frac{1}{2} \frac{1}{2} \frac{1}$	- no dedicated module, it could be
Pepper API (if any)	15. 100		achieved with external libraries
	P4. Reco	ognize persons / faces (A1)	- ALFaceDetection
	P5. Reco	ognize obstacles / uneven ground (A4,A5,A7)	- ALLaser, ALSonar
	P6. Reco	ognize/ Locate items <mark>(A4,A6,A7)</mark>	- ALVisionRecognition
	P7. Retr	rieve / store information (A1,A2,A9,A10,A12)	- ALMemory
	P8. Kee	p track of time (A2)	- no dedicated module, it could be
			achieved with different solutions
Left: Robot verbal	V1. Ask	Yes/ No questions (A1)	- ALDialog, ALSpeechRecognition,
capabilities involved			ALTextToSpeech, ALTabletService
Right: Corresponding	V2. Ask	multiple choice questions (A1,A11)	- ALDialog, ALSpeechRecognition,
Pepper API (if any)			ALTextToSpeech, ALTabletService

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	V3.	Suggest / remind (A2,A8,A10,A11)	- ALDialog, ALTextToSpeech,
			ALTabletService
	V4.	Context dependent chat (A9,A12)	- ALDialog, ALSpeechRecognition,
			ALTextToSpeech, ALTabletService
	V5.	Read audiobook (A8)	- ALTextToSpeech, ALAudioPlayer
	V6.	Encourage/ praise (A9,A10,A12)	- ALDialog, ALTextToSpeech,
			ALTabletService
	V7.	Report information (A2,A9)	- ALMemory, ALTextToSpeech,
			ALTabletService
	V8.	Place a phone call (A12)	- ALTabletService, or it could be
			achieved with a specific
			communication protocol
Which "qualitative" robot	R1.	Privacy when talking with family	
behavior is expected to be	R2.	Reminding her politely to call her daughter	
culturally dependent			
Which behavior is	T1.	Speaks with soft tone	
"quantitatively" different	T2.	Speaks in low volume	
depending con culture	T3.	Walks in low speed	
(volume and tone of voice,	T4.	Stands not too close to Mrs C	
distance, velocity, etc)	T5.	Read at a steady pace	
1.4 Mrs Chaterjee - Pre Lunch Routine, Pray

Scenario name	Mrs Chaterjee - Pre lunch routine, Pray			
Time of the day	Pre-lunch time			
General Description	<> After dressing Mrs C will light a scented stick to Lord Ganesha ¹ and pray for the removal of obstacles and health for all her family. She has in the corner of her bedroom, a small table with a couple small statues of Ganesha, Shiva and Durga ² The table is covered with a colourful cloth and on it there are a small tray with a small bell, a candle holder and an incense stick holder. She will spend there a few minutes, standing or sitting on the floor, with her hands in 'namaste' ^{3.} Today she will not make a 'puja' ⁴ . She may also want to pray for blessings for family members and close friends - birthdays/wedding anniversaries/death anniversaries etc	 The 'elephant' God the patron of art and sciences and the removal of obstacles Different parts of India, place more importance to different gods. It is not uncommon even for Christian Indians to also have statues like that in their home or a small Buddha. This does not apply to Muslim Indian families. 'Namaste', place the hands together in front of the heart, close the eyes, and bow the head. It can also be done by placing the hands together in front of the third eye, bowing the head, and then bringing the hands down to the heart. This is an especially deep form of respect. 		
		 'Puja' An offering to Gods made during prayer 		
Functional areas of the house involved	F1. bedroom			
Relevant objects involved	 O1. Small table with statues O2. Scented sticks O3. Matches O4. Special scented stick holder O5. Small tray O6. Little brass bell O7. Small candle holder 			
Relevant persons (in addition to user and caregiver)	B1. No-one			
What a human (formal or informal) caregiver shall /	H1. Possibly assist with lighting the scented stick and getting the H2. Assist with sitting on the floor and getting up	em if kept in different room?		

can do in this scenario	H3.	Pray with her		
	H4.	Chanting		
	H5.	Reading		
	H6.	Keeping quiet during prayer		
	H7.	Responding to Mrs C's needs during prayer e.g helping chan	ge her position	
	H8.	Play recorded appropriate music/chant if asked by Mrs C		
Cultural knowledge	C1.	Hindu way of praying:		
involved (top level		a) To whom - Gods e.g Ganesha		
concepts in the Cultural		b) How – the process /behaviour e.g sitting, Namaste, chant	ing, listening to music, reading prayers	
Knowledge hierarchy)		c) What – the objects used e.g candles, incense, flower peda	als	
	C2.	Maintaining the designated praying area in the room		
Which "qualitative"	D1.	(If carer non-Hindu) show interest in learning about Hinduis	m and customs during prayer	
caregiver behavior is	D2.	Knowing the time of the day for praying		
expected to be culturally	D3.	Knowing how long the person normally prays		
dependent	D4.	Helping person's position during praying		
	D5.	Maintaining Mrs C 's privacy and silence		
	D6.	Show respect for the customs and process of the prayer		
	D7.	Ask Mrs C how she feels after the prayer		
Which behavior is	E1.	Polite and soft tone of voice		
"quantitatively" different	E2.	Speak softly whilst helping with preparation for prayer		
depending on culture	E3.	Move gently in the room		
(volume and tone of voice,	E4.	Keep acceptable distance from Mrs C		
distance, velocity, etc.)	E5.	Speaking softly, ask Mrs C how she feels after the prayer		
Left: What the robot shall /	A1.	Show interest in Mrs C' praying customs by asking her	A6'. Suggest Mrs C that she can put	
can do in this scenario		questions about her religion (e.g Names of Gods, names of	some objects in the robot hands or in	
Right: Alternative tasks		the statues she has, why she uses scented sticks and	a tray permamently attached to the	
		candles, how long she normally prays for, how many times	robot's chest while she is standing or	
		a day etc) (M11,P4,P9,V2,V4) [E]	sitting.	
	A2.	Remind Mrs C of religious occasions, or that she may also	A7'+A8'. Tell Mrs C the positions of	
		want to pray for blessings for family members and close	needed objects in the environment,	
		friends - birthdays/wedding anniversaries/death	knowing them a priori, or detecting	
		anniversaries etc (P9,V3,V5,V6) [E]	them by using markers.	
	A3.	Ask her whether she would like to pray or light a scented	A10'. Check smoke sensor in the	
		stick (V1,V2) [E]	environment. In case, suggest Mrs C to	
	A4.	Ask Mrs C if she needs anything or if she want it to leave	open the window	

		the room (V1,V2) [E]	A14'. Suggest Mrs C to drink a glass of
	A5.	If in the room, provide privacy, observing Mrs C quietly	water
		during prayer (M4,M5,P4) [E]	A8'+A14". Permanently attach a tray
	A6.	Assist Mrs C to stand or sit (M3,M6,P1,P2,P4) [H]	to the robot's chest to bring objects
	A7.	Locate things as needed (scented stick holder, box of	A15'. Provide general comments about
		scented sticks. matches) (M4.M7.P5.P6) [H]	religion.
	A8.	Bring things as needed (scented stick holder, box of	0
		scented sticks. matches) (M1.M2.M4.M6.M7.P1.P5) [H]	
	A9.	Remind Mrs C to check that there are no flames etc	
		(P7.V3) [E]	
	A10.	Open window if smoke or scent too strong (P8.M9) [H]	
	A11.	Ask Mrs C if she is comfortable or if she needs anything	
		else to make her comfortable (P2.V1.V2) [E]	
	A12.	Play recorded appropriate music/chant if asked by Mrs C	
		(M8,M10,P9) [E]	
	A13.	Ask Mrs C if she needs help to get up when she finishes	
		praying (P2,P4,V1) [E]	
	A14.	Bring Mrs C a glass of water to drink at the end of praying	
		(M1,M2,M4,M6,M7,P1,P5,P6) [H]	
	A15.	Comment on Mrs C chanting and on her peaceful	
		appearance after praying, asking her how she feels after	
		praying. (M11,P3,P4,V2,V4) [H]	
Left: Robot motor	M1.	Grasp objects (A8,A14)	- no dedicated module, it could be
capabilities required			achieved with external libraries
Right: Corresponding	M2.	Carry lightweight items (A8,A14)	- feasible if payload is <300 g
Pepper API (if any)	M3.	Support for equilibrium/standing/sitting (A6)	- not feasible
	M4.	Navigate autonomously in the house (A5,A7,A8,A14)	- ALNavigation
	M5.	Track moving objects / persons (A5)	- ALLandmarkDetection,
			ALColorBlobDetection,
			ALVisionRecognition,
			ALCloseObjectDetection
	M6.	Reach a target / person (A6,A8,14)	- ALVisionRecognition,
			ALCloseObjectDetection,
			ALNavigation
	M7.	Avoid unexpected static or moving obstacles / persons	- ALMotion
		(A7,A8,A14)	

	M8.	Turn on radio / TV /cassette player (A12)	- ALAudioPlayer
			For external devices, It could be
			achieved with a specific
			communication protocol
	M9.	Open doors / windows (by communicating with smart	- It could be achieved with a specific
		environment) (A10)	communication protocol
	M10.	Operate appliance (by communicating with smart	- It could be achieved with a specific
		environment) (A12)	communication protocol
	M11.	Show feelings (A1,A15)	- ALLeds, ALRobotPosture,
			ALAnimationPlayer
Left: Robot perceptual	P1.	Locate persons (distance and position) (A6,A8,A14)	- ALPeoplePerception
capabilities required	P2.	Recognize posture, gesture, movements (A6,A11,A13)	- no dedicated module, it could be
Right: Corresponding			achieved with external libraries
Pepper API (if any)	P3.	Recognize emotions (A15)	- ALMood
	P4.	Recognize actions (A1,A5,A6,A13,A15)	- no dedicated module, it could be
			achieved with external libraries
	P5.	Recognize obstacles / uneven ground (A7,A8,A14)	- ALLaser, ALSonar
	P6.	Recognize/ Locate items (A7,14)	- ALVisionRecognition
	P7.	Recognize fire / flame (A9)	- not feasible, it could be achieved by
			communicating with the smart
			environment using a specific
			protocol
	P8.	Recognize level of smoke/ scent (A10)	- not feasible, it could be achieved by
			communicating with the smart
			environment using a specific
			protocol
	P9.	Retrieve / store information (A1,A2,A12)	- ALMemory
Left: Robot verbal	V1.	Ask Yes/ No questions (A3,A4,A11,A13)	- ALDialog, ALSpeechRecognition,
capabilities involved			ALTextToSpeech, ALTabletService
Right: Corresponding	V2.	Ask multiple choice questions (A1,A3,A4,A11,A15)	- ALDialog, ALSpeechRecognition,
Pepper API (if any)			ALTextToSpeech, ALTabletService
	V3.	Suggest / remind (A2,A9)	- ALDialog, ALTextToSpeech,
			ALTabletService
	V4.	Context dependent chat (A1,A15)	- ALDialog, ALSpeechRecognition,
			ALTextToSpeech, ALTabletService
	V5.	Encourage/ praise (A2)	- ALDialog, ALTextToSpeech,

	V6.	Report information (A2)	ALTabletService - ALMemory, ALTextToSpeech, ALTabletService	
Which "qualitative" robot	R1.	Show interest in learning about Hinduism and customs durin	ng prayer	
behavior is expected to be	R2.	Robot should have access to relevant dates as she may also want to pray for blessings for family		
culturally dependent		members and close friends - birthdays/wedding anniversaries/death anniversaries etc		
	R3.	Knowing the time of the day for praying		
	R4.	Knowing how long the person normally prays		
	R5.	Helping person's position during praying		
	R6.	Maintaining Mrs C 's privacy and silence		
	R7.	Show respect for the customs and process of the prayer		
	R8.	Ask Mrs C how she feels after the prayer		
Which behavior is	T1.	Speaks with soft tone whilst helping with preparation for pro-	ayer	
"quantitatively" different	T2.	Speaks with soft tone while asking Mrs C how she feels after the prayer		
depending con culture	Т3.	Walks in low speed		
(volume and tone of voice,	T4.	Keeps acceptable distance from Mrs C		
distance, velocity, etc)				

1.5 Mrs Chaterjee - Lunch Routine, Eating

Scenario name	Mrs Chaterjee - Lunch routine, Eating
Time of the day	Lunch time
General Description	 Secause of health problems (thyroid and high cholesterol) Mrs C has normally a light lunch. Usually dhal ¹ and fish curry². She has prepared enough dhal and fish curry for lunch and dinner and has kept them in two containers. Instead of 'bhat' ³ she will make 2 chapatis⁴ or maybe four and keep 2 for dinner. She takes out the ingredients and makes the dough. Then on the kitchen counter or table she will use the rolling pin to make perfect round chapatis. She will heat a frying pan and just heat/cook the chapatis without using any oil.⁵ She will put in two smaller bowls of dhal, fish curry and warm them up. She will sit at the table and with her left hand, she will first serve the dhal, then the fish curry. She likes eating with her hand (right hand only, serving with left)⁶. She may have some cucumber also and her homemade mango chutney. She will then have a glass of water and her medication for cholesterol.
Functional areas of the house involved	F1. Kitchen F2. Kitchen table F3. Or dining table in another room
Relevant objects involved	 O1. Brass utensils most probably brought from India O2. Possibly special frying pan for making chapatis O3. Plates/glass O4. Chairs/ stools
Relevant persons (in addition to user and caregiver)	B1. No-one
What a human (formal or informal) caregiver shall / can do in this scenario	 H1. Assist with the warming of the food H2. Making the dough for the chapatis H3. Rolling the chapatis and cooking them H4. Bring everything at the table H5. Serve

	H6.	Keep company		
	H7.	Bring the medication		
	H8.	Ask Mrs C if she likes some music in the background.		
	H9.	Wash the dishes		
Cultural knowledge	C1.	Indian way of cooking		
involved (top level	C2.	Utensils used in Indian cooking		
concepts in the Cultural	C3.	Dietary preferences based on region of India, caste and relig	gion	
Knowledge hierarchy)	C4.	Way of eating (use of right hand)		
c <i>n</i>	C5.	Way of serving		
	C6.	Indian music		
	C7.	Order food is served		
Which "qualitative"	D1.	Time of eating		
caregiver behavior is	D2.	Type of food		
expected to be culturally	D3.	Order of having the food. For Bengalis, dhal is offered first,	and then the vegetable, then chicken or	
dependent		fish curry, you finish with chutney.		
	D4.	Appropriate utensils used		
	D5.	Type of music		
	D6.	If a guest is having lunch with Mrs C, the guest is expected t	to eat and be served or be offered food	
		multiple times. In addition many more dishes will have beer	n prepared.	
	D7.	Indirect questioning		
Which behavior is	E1.	Polite and soft tone of voice		
"quantitatively" different	E2.	Unrushed walking and eating		
depending con culture	E3.	Being silent when needed		
(volume and tone of voice,				
distance, velocity, etc.)				
What the robot shall / can	A1.	Recommend dishes (P4,P5,V3,V5) [E]	A3'. Knowing the recipes given in A2,	
do in this scenario	A2.	Provide recipes (P4,V4) [E]	ask Mrs C if each of the needed	
Right: Alternative tasks	A3.	Remind Mrs C of needed groceries (P4,V3,V7) [E]	ingredients is present and create a list	
	A4.	Locate things as needed (food, kitchen tools, medication)	on the tablet	
		(M3,M5,P2,P3) [H]	A3". Ask Mrs C if she wants to	
	A5.	Bring things as needed (food, kitchen tools, medication) to	generate some reminders for missing	
		the table (M1,M2,M3,M4,M5,P1,P2) [H]	ingredients	
	A6.	Praise on eating a healthy and balanced diet (V3,V5,V6)	A4'+A5'. Tell Mrs C the positions of	
		[E]	needed objects in the environment,	
	A7.	Suggest healthy food (e.g. salad) and to drink water	knowing them a priori, or detecting	

		(V5,V6) [E]	them by using markers.
	A8.	Keep company during lunch (V1,V2,V5) [E]	A5". Permanently attach a tray to the
	A9.	Remind her to take her medication (P4,V3) [E]	robot's chest to bring objects
	A10.	Comment on how 'good' the dishes look and congratulate	A10'. Provide general comments on
		her for her cooking abilities (M6,V5,V6) [H]	dishes
	A11.	Ask Mrs C if she wants to hear some music and in case	A11'. Ask Mrs C if she wants to hear
		play Indian music <mark>(M7,M8,P6,V1) [H]</mark>	radio and the type of music. Then,
			reproduce the selected radio channel
Left: Robot motor	M1.	Grasp objects (A5)	- no dedicated module, it could be
capabilities required			achieved with external libraries
Right: Corresponding	M2.	Carry lightweight items (A5)	- feasible if payload is <300 g
Pepper API (if any)	M3.	Navigate autonomously in the house (A4,A5)	- ALNavigation
	M4.	Reach a target / person (A5)	- ALVisionRecognition,
			ALCloseObjectDetection, ALNavigation
	M5.	Avoid unexpected static or moving obstacles / persons	- ALMotion
		(A4,A5)	
	M6.	Show feelings (A10)	- ALLeds, ALRobotPosture,
			ALAnimationPlayer
	M7.	Turn on radio / TV / cassette player (A11)	- ALAudioPlayer
			For external devices, It could be
			achieved with a specific
			communication protocol
	M8.	Operate appliance (by communicating with smart	- It could be achieved with a specific
		environment) (A11)	communication protocol
Left: Robot perceptual	P1.	Locate persons (distance and position) (A5)	- ALPeoplePerception
capabilities required	P2.	Recognize obstacles / uneven ground (A4,A5)	- ALLaser, ALSonar
Right: Corresponding	P3.	Recognize/ Locate items (A4)	- ALVisionRecognition
Pepper API (if any)	P4.	Retrieve / store information (A1,A2,A3,A9)	- ALMemory
	P5.	Recognize persons / faces (A1)	- ALFaceDetection
	P6.	Recognize actions (A11)	- no dedicated module, it could be
			achieved with external libraries
Left: Robot verbal	V1.	Ask Yes/ No questions (A8,A11)	- ALDialog, ALSpeechRecognition,
capabilities involved			ALTextToSpeech, ALTabletService
Right: Corresponding	V2.	Ask multiple choice questions (A8)	- ALDialog, ALSpeechRecognition,
Pepper API (if any)			ALTextToSpeech, ALTabletService

	V3.	Suggest / remind (A1,A3,A6,A9)	- ALDialog, ALTextToSpeech,
			ALTabletService
	V4.	List instructions (A2)	- ALDialog, ALTextToSpeech,
			ALTabletService
	V5.	Context dependent chat (A1,A6,A7,A8,A10)	 ALDialog, ALSpeechRecognition,
			ALTextToSpeech, ALTabletService
	V6.	Encourage/ praise (A6,A7,A10)	 ALDialog, ALTextToSpeech,
			ALTabletService
	V7.	Report information (A3)	- ALMemory, ALTextToSpeech,
			ALTabletService
Which "qualitative" robot	R1.	Way of serving	
behavior is expected to be	R2.	Being discreet	
culturally dependent	R3.	Being silent when elders are speaking	
	R4.	Asks indirect questions	
Which behavior is	T1.	Speaks with soft tone	
"quantitatively" different	T2.	Speaks in low volume	
depending con culture	Т3.	Walks in low speed	
(volume and tone of voice,	T4.	Stands not too close to Mrs C	
distance, velocity, etc)			

1.6 MRS CHATERJEE - AFTER LUNCH ROUTINE, NAP AND MEDITATION

Scenario name	Mrs Chaterjee - After Lunch routine, Nap and meditation			
Time of the day	Early afternoon			
General Description	<> after her light lunch Mrs C is sitting comfortably in her armchair in the living room . The radio is on at the backgroundshe has her feet on a stool and she is covered by her favourite soft blanket. She closes her eyes and meditates ¹ for a while. She soon falls asleep. After half hour she wakes up refreshed and looks for her slippers; she puts them on and takes a look outside She may also say slowly the words: Buddham Sharanam Gacchami (a Buddhist mantra) even though she is a Hindu.			
Functional areas of the house involved	F1. Living room			
Relevant objects involved	 O1. Armchair O2. Stool O3. blanket O4. Radio O5. Japa mala (playing string of beads) O6. Slippers 			
Relevant persons (in addition to user and caregiver)	B1. No-one			
What a human (formal or informal) caregiver shall / can do in this scenario	 H1. Don't disturb her nap but keep track of time H2. If she usually takes a nap for 30 minutes, make sure that she gently wakes up and don't let her stay in the chair for hours. H3. Bring her Japa Mala (praying string of beads) If she has one and she uses it for meditation H4. Reminder her where her Japa Mala is located if she doesn't remember H5. Help her put the slippers on H6. Know whether she uses a cd or specific music for mediation 			

Cultural knowledge	C1.	Use of words in Hindi	
involved (top level	C2.	Indian meditation and how is performed	
concepts in the Cultural	C3.	The significance of the praying spring	
Knowledge hierarchy)	C4.	Knowledge regarding the number of beads	
Which "qualitative"	D1.	Personal space - Distance from Mrs C	
caregiver behavior is	D2.	Bringing the Japa Mala to Mrs C	
expected to be culturally	D3.	Maintaining a quiet environment	
dependent			
M/high hohowigg is	F1	Delite and off tange law values of value	
which behavior is	E1.	Polite and soft tone, low volume of voice	
quantitatively different	E2.	Costures are centle and not too successful	
depending on culture	E3.	Gestures are gentie and not too exaggerated	
(volume and tone of volce,			
Left: What the repet chall (A 1	Malk towards Mrs C (MA ME M7 D1 DE DC) [5]	AF' A7' Tall Mrs C the positions of
can do in this sconario	AI.	Walk LOwards IVITS C (IVI4, IVI5, IVI7, P1, P5, P0) [E]	AS -A7. Tell Mirs C the positions of
Right: Altornative tasks	AZ.	Ask Mrs C if she would like the radio on off or	knowing them a priori, or detecting
Right. Alternative tasks	AS.	meditation music (V2) [E]	them by using markers.
	A4.	Put on appropriate meditation music if needed (M8,M9) [E]	A7". Permanently attach a tray to the robot's chest to bring objects
	A5.	Locate the stool and help in moving it close to the armchair (M1,M5,M6,P7) [H]	
	A6.	Locate things as needed (blanket, praying beads, slippers) (M4,M7,P6,P7) [H]	
	A7.	Bring things as needed (blanket, praying beads, slippers) (M2,M3,M4,M5,M7,P1,P6) [H]	
	A8.	Ask Mrs C if she prefer to be woken up after some time (P4,P8,V1) [E]	
	A9.	Keep track of time and eventually gently wake up Mrs C if she sleeps for more than the required time (P2,P4,P9,V4)	
		[E]	
	A10.	Remind Mrs C to move (V4) [E]	
	A11.	Show interest on Mrs C meditation routine and ask	
		information about it (if the robot does not have these	
		information) (M10,P8,V1,V2,V3) [E]	

Left: Robot motor	M1.	Coordinately move base/ arms/ hands (A5)	- ALMotion
capabilities required	M2.	Grasp objects (A7)	- no dedicated module, it could be
Right: Corresponding			achieved with external libraries
Pepper API (if any)	M3.	Carry lightweight items (A7)	- feasible if payload is <300 g
	M4.	Navigate autonomously in the house (A1,A6,A7)	- ALNavigation
	M5.	Reach a target / person (A1,A5,A7)	- ALVisionRecognition,
			ALCloseObjectDetection, ALNavigation
	M6.	Push objects (<mark>A5)</mark>	- no dedicated module, the safety
			module should be deactivated
	M7.	Avoid unexpected static or moving obstacles / persons	- ALMotion
		(A1,A6,A7)	
	M8.	Turn on radio / TV /cassette player <mark>(A4)</mark>	- ALAudioPlayer
			For external devices, It could be
			achieved with a specific
			communication protocol
	M9.	Operate appliance (by communicating with smart	- It could be achieved with a specific
		environment) (A4)	communication protocol
	M10.	Show feelings (A11)	- ALLeds, ALRobotPosture,
			ALAnimationPlayer
Left: Robot perceptual	P1.	Locate persons (distance and position)) (A1,A7)	- ALPeoplePerception
capabilities required	P2.	Recognize posture, gesture, movements (A2,A9)	- no dedicated module, it could be
Right: Corresponding			achieved with external libraries
Pepper API (if any)	P3.	Recognize emotions (A2)	- ALMood
	P4.	Recognize actions (A8,A9)	- no dedicated module, it could be
			achieved with external libraries
	P5.	Recognize persons / faces (A1)	- ALFaceDetection
	P6.	Recognize obstacles / uneven ground (A1,A6,A7)	- ALLaser, ALSonar
	P7.	Recognize/ Locate items (A5,A6)	- ALVisionRecognition
	P8.	Retrieve / store information (A8,A11)	- ALMemory
	P9.	Keep track of time (A9)	- no dedicated module, it could be
			achieved with different solutions

Left: Robot verbal	V1.	Ask Yes/ No questions (A2,A8,A11)	- ALDialog, ALSpeechRecognition,
Right: Corresponding	V 2	Ack multiple choice questions (A2 A11)	ALTextToSpeech, ALTabletService
Penner API (if any)	٧٢.	Ask multiple choice questions (AS,ATT)	- ALDIAIOS, ALSPEECINECOSIIITION, ALTextToSpeech ALTabletService
	V3	Context dependent chat (A11)	- Al Dialog Al Speech Recognition
	v3.		ALTextToSpeech. ALTabletService
	V4.	Encourage/ praise (A9,A10)	- ALDialog, ALTextToSpeech,
			ALTabletService
Which "qualitative" robot	R1.	Bringing the Japa Mala to Mrs C	
behavior is expected to be	R2.	Maintaining a quiet environment for meditation	
culturally dependent	R3.	Do not touch	
Which behavior is	T1.	Speaks with soft tone	
"quantitatively" different	T2.	Speaks in low volume	
depending con culture	Т3.	Walks in low speed	
(volume and tone of voice,	T4.	Stands not too close to Mrs C	
distance, velocity, etc)	T5.	Not too many gestures	

1.7 Mrs Chaterjee - After Lunch Routine, Exercise and Afternoon Tea

Scenario name	Mrs Chaterjee - After Lunch routine, Exercise and afternoon tea
Time of the day	Early afternoon
General Description	 <> After napping for half hour Mrs C wakes up refreshed and looks for her slippers; she puts them on and takes a look outside. Although her vision is not very good she can see that It is not raining and she has been told by her carer that it is not too cold outside today. She has accepted her visual impairment as a result of Karma³. Since she likes walking she decides to go for a short walk in the garden. She struggles to put her coat on and grabs her walking stick which is hanging by the door. After her nice walk, it is time for some tea¹. She takes care not to pour hot water over her hands by mistake. She likes to have her tea with some tea biscuits or cake² brought by her son in his last visit.
Functional areas of the	F1. Living room
house involved	F2. Kitchen
	F3. Outside areas of the house (garden)
Relevant objects involved	 O1. Walking stick O2. Slippers O3. Shoes O4. Coat and hat O5. Coat stand O6. Teapot O7. Cups O8. Tea O9. Spices O10. Indian cake
Relevant persons	B1. No-one
(in addition to user and	
caregiver)	

What a human (formal or	H1.	Help her put the slippers on/OFF			
informal) caregiver shall /	H2.	Information about the weather			
can do in this scenario	H3.	Encourage her to go for walk			
	H4.	Help her put on her shoes, or give the shoes			
	H5.	Help her put on her coat, scarf or hat	Help her put on her coat, scarf or hat		
	H6.	Accompany her to the walk			
	H7.	Warning as they walk of uneven pavement or steps (prevent	t fall due to poor eyesight)		
	H8.	Assist with making the tea			
	H10.	Bring the cakes/tea biscuits			
	H11.	Keep company, e.g. talk about her son			
Cultural knowledge	C1.	Indian way of making tea			
involved (top level	C2.	Indian snacks and sweets			
concepts in the Cultural	C3.	Use of words in Hindi			
Knowledge hierarchy)	C4.	Understanding the belief in Karma			
Which "qualitative"	D1.	Able to prepare Indian tea			
caregiver behavior is	D2.	Motivating exercising as part of living a healthy life			
expected to be culturally	D3.	Being compassionate to Mrs C whilst walking with her in the garden aiming at preserving her dignity			
dependent	D4.	Allow Mrs C to hold your arm for her safety			
	D5.	Know when to be close and when to keep your distance			
Which behavior is	E1.	Polite and soft tone, low volume of voice			
"quantitatively" different	E2.	Moving about in calm slow manner			
depending on culture	E3.	Gestures are gentle and not too exaggerated			
(volume and tone of voice,					
distance, velocity, etc.)					
Left: What the robot shall /	A1.	Help Mrs C to put coat on (M1,M2,M3,M8,P1,P2,P7,P12)	A1'. Bring a coat hanger (which has		
can do in this scenario		[H]	wheels) to Mrs C, and then bring it		
Right: Alternative tasks	A2.	Locate things as needed (reading glasses, shoes, slippers,	back to its place.		
		coat, hat, walking stick, cup, biscuits, cake)	A2'+A3'. Tell Mrs C the positions of		
		(M5,M10,P6,P7) [H]	needed objects in the environment,		
	A3.	Bring things as needed (reading glasses, shoes, slippers,	knowing them a priori, or detecting		
		coat, hat, walking stick, cup, biscuits, cake)	them by using markers.		
		(M2,M3,M5,M8,M10,P1,P6) [H]	A3". Permanently attach a tray to the		
	A4.	Provide information about the weather (P8,P10,V5) [E]	robot's chest to bring objects		
	A5.	Suggest a walk and accompany her during the walk	A5'+A9'. Suggest a walk, waiting at		
		(M6,M7,M10,M11,P4,V1,V2,V4) [H]	home		

	A6.	Comment on the flowers and suggest Mrs C to look at a	A6". Talk about typical flowers and
		bird when one is in view (M12,P7,V2,V3) [H]	birds that could be seen given the
	A7.	Remind her to be careful (P6,V2) [E]	time of the year.
	A8.	Count the steps Mrs C is taking and compare with the	A8". Keep track of time and provide
		number of steps she did in previous days (P5,P8) [H]	comments and comparisons.
	A9.	Scan the garden and informs Mrs C when she is	A8'''. Use a wearable device worn by
		approaching a dip or uneven surface (M9,M10,P6,V2,V5)	Mrs C (watch, accelerometer) to
		[H]	compute steps and movements, and
	A10.	Take pictures /selfies near the flowers (P11) [H]	provide comments.
	A11.	Provide encouragement and praise (M12.P3.V3.V4) [E]	A9". Periodically remind Mrs C to pay
	A12.	Suggest that they could return to the house (P5,P9,V1,V2)	attention to the ground
		[E]	A10'. Take pictures of Mrs C.
	A13.	Hold tray with cake on it (M1,M4,P7) [H]	A10". Ask Mrs C if she wants to take a
		, , , , , , , , ,	picture (to send to her children?), and
			if so, indicate by her arm what should
			be in the picture.
			A13'. Suggest Mrs C to bring the tray
			with cake
Left: Robot motor	M1.	Coordinately move base/ arms/ hands (A1,A13)	- ALMotion
capabilities required	M2.	Grasp objects (A1,A3)	- no dedicated module, it could be
Right: Corresponding			achieved with external libraries
Pepper API (if any)	M3.	Carry lightweight items (A1,A3)	- feasible if payload is <300 g
	M4.	Carry heavyweight items (A13)	- not feasible
	M5.	Navigate autonomously in the house (A2,A3)	- ALNavigation
	M6.	Track moving objects / persons (A5)	- ALLandmarkDetection,
			ALColorBlobDetection,
			ALVisionRecognition,
			ALCloseObjectDetection
	M7.	Follow moving objects / persons (A5)	- ALVisionRecognition,
			ALCloseObjectDetection, ALNavigation
	M8.	Reach a target / person (A1,A3)	- ALVisionRecognition,
			ALCloseObjectDetection, ALNavigation
	M9.	Move on uneven ground (A9)	- ALMotion
	M10.	Avoid unexpected static or moving obstacles / persons	- ALMotion
		(A2,A3, A5,A9)	
	M11.	Open doors / windows (by communicating with smart	- It could be achieved with a specific

		environment) (A5)	communication protocol
	M12.	Show feelings (A6,A11)	- ALLeds, ALRobotPosture,
			ALAnimationPlayer
Left: Robot perceptual	P1.	Locate persons (distance and position) (A1,A3)	- ALPeoplePerception
capabilities required	P2.	Recognize posture, gesture, movements (A1)	- no dedicated module, it could be
Right: Corresponding			achieved with external libraries
Pepper API (if any)	P3.	Recognize emotions (A11)	- ALMood
	P4.	Recognize actions (A5)	- no dedicated module, it could be
			achieved with external libraries
	P5.	Detect human steps <mark>(A8,A12)</mark>	- not feasible, it could be achieved by
			communicating with wearable
			sensors
	P6.	Recognize obstacles / uneven ground (A2,A3,A7,A9)	- ALLaser, ALSonar
	Ρ7.	Recognize/ Locate items (A1,A2,A6,A13)	- ALVisionRecognition
	P8.	Retrieve / store information (A4,A8)	- ALMemory
	P9.	Keep track of time (A12)	- no dedicated module, it could be
			achieved with different solutions
	P10.	Recognize weather/ temperature (A4)	- no dedicated module, it could be
			checked the broadcast on internet
			or by communicating with the smart
			environment
	P11.	Take pictures <mark>(A10)</mark>	- ALPhotoCapture
	P12.	Recognize persons / faces (A1)	- ALFaceDetection
Left: Robot verbal	V1.	Ask Yes/ No questions (A5,A12)	- ALDialog, ALSpeechRecognition,
capabilities involved			ALTextToSpeech, ALTabletService
Right: Corresponding	V2.	Suggest / remind (A5,A6,A7,A9,A12)	- ALDialog, ALSpeechRecognition,
Pepper API (if any)			ALTextToSpeech, ALTabletService
	V3.	Context dependent chat (A6,A11)	- ALDialog, ALSpeechRecognition,
			ALTextToSpeech, ALTabletService
	V4.	Encourage/ praise (A5,A11)	 ALDialog, ALTextToSpeech,
			ALTabletService
	V5.	Report information (A4,A9)	- ALMemory, ALTextToSpeech,
			ALTabletService
Which "qualitative" robot	R1.	Way of greeting –slight bow, holds palms together	
behavior is expected to be	R2.	Able to prepare Indian tea	

culturally dependent	R3. R4. R5. R6. R7.	Motivating Mrs C to exercise as part of living a healthy life Being compassionate to Mrs C whist walking with her in the garden aiming at preserving her dignity Allow Mrs C to hold its arm for her safety Know when to be close and when to keep your distance Do not touch
Which behavior is	T1.	Speaks with soft tone
"quantitatively" different	T2.	Speaks in low volume
depending con culture	Т3.	Walks in low speed
(volume and tone of voice,	T4.	Not too many gestures
distance, velocity, etc)	T5.	Stands not too close to Mrs C in the house

1.8 Mrs Chaterjee - After Lunch Routine, Social Activities (drinking tea, visitors, talking)

Scenario name	Mrs Chaterjee - After lunch routine, Social activities (drinking tea, visitors, talking)				
Time of the day	Afternoon				
General Description	<> Today Mrs C woke up with a little bit of cold. She calls her carer to help her make a hot drink. She would like to have some hot tea with ginger ¹ . She also asks for some cloves to chew ² , they are good for the sore throat. Her good friend, Lila, comes over. Mrs C is still in her nightdress and robe but insists that Lila comes in to at least a cup of tea. ^{3,4} Mrs C goes into her bedroom and asks her carer to find certain clothes. Since the deterioration of her eyesight it has been difficult for her to find quickly the things she needs. She gets dressed. They start chatting in Bengali ⁵ . Her friend looks at her and comments on how beautiful she looks in her shawl ⁶ . Mrs C asks her carer to bring out some snacks and sweets ⁷ . She also asks her to make sweet masala tea ⁸ , just the way her friend likes it. They sit comfortably and continue to chat. Her friend has a daughter around 25 and she is getting worried about her marriage prospect. Lila asks Mrs C's opinion about a good astrologer ⁹ as she wants to consult the stars about her daughter's future.	 Putting ginger in tea is believed to relief cold symptoms Similarly with chewing cloves, especially when you have a sore throat. Visitors are welcome and need to be treated nicely, offering a snack or tea or coffee. Close friends may hug but it is not necessary. They will do a Namaste (hand gesture), take their shoes off and leave close to the door and then come in. To perform Namaste, place the hands together in front of the heart, close the eyes, and bow the head. It can also be done by placing the hands together in front of the third eye, bowing the head, and then bringing the hands down to the heart. This is an especially deep form of respect. Common to talk in native language Big scarf, if winter possibly woolen. Products (chana chur) purchased from a local Indian shop Indian way of making tea, usually, boil water, milk, some spices and tea leafs. It is common to consult astrologers for the couple compatibility, dates for marriage ceremonies, etc. 			
Functional areas of the house involved	F1. Living room F2. Kitchen – cabinets, refrigerator				
	F3. Bedroom - Drawer				

Relevant objects involved	O1. Sari	
	O2. Shawl	
	O3. Door	
	O4. Cups,	
	O5. Spoons	
	O6. Plates	
	O7. Packages of snacks, sweets	
Relevant persons	B1. Friend	
(in addition to user and		
caregiver)		
What a human (formal or	H1. Open the door for visitor and greet appropriately	
informal) caregiver shall /	H2. Welcome the visitor	
can do in this scenario	H3. Ask whether she would like to take her coat off	
	H4. Take her coat and hang it or place it to the appropriate place	
	H5. Ask the visitor whether she would like something to drink	
	H6. Help make the tea	
	H7. Bring shawl from bedroom	
	H8. Help in the kitchen by getting the cups, plates, sweets	
Cultural knowledge	C1. Indian way of making tea	
involved (top level	C2. Indian snacks and sweets	
concepts in the Cultural	C3. Ayurveda medicine - Home remedies for cold	
Knowledge hierarchy)	C4. Hindu dressing and accessories	
	C5. Mrs C mother tongue is Bengali	
	C6. Appropriate for friends and relatives to stop by without calling in advance	
	C7. Expected to invite friends in the house and be hospitable (offer tea/ coffee/ snack) depending	on
	the time of the day	
	C8. Taking shoes off on entering someone's house	
	C9. Common practice for Hindus to consult astronomy for important stages of life	
Which "qualitative"	D1. Proper way of greeting and hospitality	
caregiver behavior is	D2. Properly addressing the visitor	
expected to be culturally	D3. Properly addressing Mrs C as mashi (aunty)	
dependent	D4. Distance from visitor and non-involvement in discussion	
	D5. Finding the clothes Mrs C wants to wear	
	D6. Helping in the kitchen, knowing where things are kept	
	D7. Bringing the shawl for Mrs C	

	D8.	Makes the masala tea	
	D9.	Puts some chana chur in a bowl	
	D10.	Serves the tea and sweets to Mrs C and Lila	
	D11.	Washes the cups and dishes	
	D12.	Touching not desirable for non-family members	
Which behavior is	E1.	Polite and soft tone of voice	
"quantitatively" different	E2.	Keep some distance for non-family members	
depending con culture	E3.	Move gently and with low velocity	
(volume and tone of voice,	E4.	Smile	
distance, velocity, etc.)			
Left: What the robot shall /	A1.	Ask Mrs C how she is feeling and if she is warm enough	A6'. Show the visitor where to hang
can do in this scenario		(P2,P4,V1,V2) [E]	coat
Right: Alternative tasks	A2.	Recommend Mrs C having a tea with ginger for her cold	A8'+A9'. Tell Mrs C the positions of
		(M10,V3,V4) [E]	needed objects in the environment,
	A3.	Greet the visitor performing "Namaste" (M1,M6,M9,P4,V5)	knowing them a priori, or detecting
		[E]	them by using markers.
	A4.	Ask the visitor to remove her shoes and leave them by the	A11'+A12'. Locate and indicate
		door (V1,V3) [E]	objects needed for preparing the tray,
	A5.	Ask the visitor whether she would like to take her coat off	knowing their position in the
		and whether she would like something to drink (V1,V2) [E]	environment, or using markers.
	A6.	Take and hang visitor's coat H (M2,M3,M4,M7,P1,P6) [H]	Suggest Mrs C to bring the tray with
	A7.	Provide privacy (M6,P3) [E]	food to the table
	A8.	Locate clothes for Mrs C (M6,M8,P5,P6) [H]	A12". Permanently attach a tray to
	A9.	Bring clothes to Mrs C (M3,M4,M6,M7,M8,P1,P5) [H]	the robot's chest to bring objects
	A10.	Ask Mrs C and the visitor how it can help with the tea (V2)	
		[E]	
	A11.	Locate relevant objects for tea preparation (ginger, cloves,	
		sweets, cups, plates and tray) (M6,M8,P5,P6) [H]	
	A12.	Prepare and bring a tray with tea and sweets in the living	
		room (M2,M3,M5,M6,M7,M8,P1,P5) [H]	
	A13.	Ask Mrs C if she needs to retrieve the astronomers' details	
		(V1,V3) [E]	
	A14.	Find the astronomer's contact details (V6,P7) [E]	

Left: Robot motor	M1.	Coordinately move torso/arms / hands (A3)	- ALMotion
capabilities required	M2.	Coordinately move base / arms / hands (A6,A12)	- ALMotion
Right: Corresponding	M3.	Grasp objects (A6.A9.A12)	- no dedicated module. it could be
Pepper API (if any)			achieved with external libraries
	M4.	Carry lightweight items (A6,A9)	- feasible if payload is <300 g
	M5.	Carry heavyweight items (A12)	- not feasible
	M6.	Navigate autonomously in the house	- ALNavigation
		(A3,A7,A8,A9,A11,A12)	
	M7.	Reach a target / person (A6,A9,A12)	- ALVisionRecognition,
			ALCloseObjectDetection,
	M8.	Avoid unexpected static or moving obstacles / persons	ALNavigation
		(A8,A9,A11,A12)	- ALMotion
	M9.	Open doors / windows (by communicating with smart	- It could be achieved with a specific
		environment) <mark>(A3)</mark>	communication protocol
	M10.	Show feelings (A2)	- ALLeds, ALRobotPosture,
			ALAnimationPlayer
Left: Robot perceptual	P1.	Locate persons (distance and position) (A6,A9,A12)	- ALPeoplePerception
capabilities required	P2.	Recognize emotions (A1)	- ALMood
Right: Corresponding	P3.	Recognize actions (A7)	- no dedicated module, it could be
Pepper API (if any)			achieved with external libraries
	P4.	Recognize persons / faces (A1,A3)	- ALFaceDetection
	P5.	Recognize obstacles / uneven ground (A8,A9,A11,A12)	- ALLaser, ALSonar
	P6.	Recognize / locate items (A6,A8,A11)	- ALVisionRecognition
	P7.	Retrieve / store information (A14)	- ALMemory
Left: Robot verbal	V1.	Ask Yes / No questions (A1,A4,A5,A13)	 ALDialog, ALSpeechRecognition,
capabilities involved			ALTextToSpeech, ALTabletService
Right: Corresponding	V2.	Ask multiple choice questions (A1,A5,A10)	 ALDialog, ALSpeechRecognition,
Pepper API (if any)			ALTextToSpeech, ALTabletService
	V3.	Suggest / remind (A2,A4,A13)	 ALDialog, ALTextToSpeech,
			ALTabletService
	V4.	Context dependent chat (A2)	 ALDialog, ALSpeechRecognition,
			ALTextToSpeech, ALTabletService
	V5.	Greet (A3)	 ALDialog, ALTextToSpeech
	V6.	Report information (A14)	 ALMemory, ALTextToSpeech,
			ALTabletService

Which "qualitative" robot	R1.	Proper way of greeting and hospitality
behavior is expected to be	R2.	Properly addressing the visitor
culturally dependent	R3.	Properly addressing Mrs C, for example 'mashi' (aunty)
	R4.	Distance from visitor and non-involvement in discussion
	R5.	Finding the clothes Mrs C wants to wear
	R6.	Helping in the kitchen, knowing where things are kept
	R7.	Bringing the shawl for Mrs C
	R8.	Carries the masala tea on a tray
	R9.	Carries some chana chur in a bowl
	R10.	Do not touch
Which behavior is	T1.	Speaks with soft voice
"quantitatively" different	T2.	Walks in a low speed
depending con culture	Т3.	Keeps acceptable distance from the visitor
(volume and tone of voice,	T4.	Smile frequently
distance, velocity, etc)		

1.9 Mrs Chaterjee - After Lunch Routine, Son, social activity

Scenario name	Mrs Chaterjee - After Lunch routine, Son, social activity					
Time of the day	Late afternoon					
General Description	<> It is late afternoon now and her son just popped in to visit. He calls her 'Ma' ¹ , bends to touch her feet, she touches his head,	 Ways of calling mother: Ma or Ama or Ai,or Mata (depending on language) 				
	and they hug ² . He takes off his shoes ³ , leaves them close to the door and they go in. They sit on the sofa close together. They start	2. Greetings				
	talking about his day. She asks about his work and the children. He	3. Entering the house				
	asks of what she did since he last visited. He shows her some of the latest photos on his smartphone from the children and family. He brings her glasses. They talk, and laugh. Then they take a selfie together and he also takes a photo of her.	4. Indian festival of lights, usually in October or November, one of the biggest festivals, celebrating the light over darkness, the good over evil.				
	Before he leaves he helps her put her coat and hat on and takes her for a walk in the garden. He tells her, that walking and					
	exercising is good for her.					
	She asks him when he will visit her again and he reminds her that					
	ext week is Diwali ⁴ so he will be coming the day before Diwali to					
	take her so that she can celebrate it with the family.					
	He has to go now, they hug, she touches his head, gives him her					
	blessing, and they say goodbye.					
Functional areas of the	F1. Living room or bed/living area					
house involved	F2. Outside areas of the house (garden) and entrance					
Relevant objects involved	O1. Sofa					
	O2. Reading glasses					
	O3. Walking stick					
	O4. Shoes					
	05. Coat and hat					
	06. Coat stand					
	U7. Smartphone					
Relevant persons	B1. Son (Informal carer)					
(in addition to user and						
caregiver)						

What a human (formal or	H1.	Encourage her to go for walk			
informal) caregiver shall /	H2.	Help her put on her shoes, or give the shoes			
can do in this scenario	H3.	Help her put on her coat, scarf or hat			
	H4.	Accompany her to the walk			
	H5.	Provide some privacy to mother and son (formal carer)			
	H6.	Ask whether the son would like something to eat or drink			
	H7.	tay back at the house			
	H8.	(eep company and talk about Diwali (informal carer)			
	H9.	Switch off the radio			
	H10.	Switch off lights as needed.			
Cultural knowledge	C1.	Greeting customs			
involved (top level	C2.	Level of communication and detail of exchange of information	on		
concepts in the Cultural	C3.	Son /parent relationship in Indian culture			
Knowledge hierarchy)	C4.	Use of words in Hindi			
	C5.	Expectation that families celebrate festivals together			
	C6.	Indian festival and preparation			
	C7.	Consulting her son and complying to his advice/suggestions			
Which "qualitative"	D1.	Way of greeting with non-family members			
caregiver behavior is	D2.	Distance from visitor and involvement in discussion by non-f	amily		
expected to be culturally	D4.	Mother –son way of greeting, talking			
dependent	D5.	Expression of compassion between mother-son			
	D6.	Sharing details of everyday life			
	D7.	Touching not desirable for non-family members			
Which behavior is	E1.	Polite and soft tone, low volume of voice			
"quantitatively" different	E2.	Keep some distance for non-family members			
depending on culture	E3.	Moving about in calm slow manner			
(volume and tone of voice,	E4.	Gestures are gentle and not too exaggerated			
distance, velocity, etc.)					
Left: What the robot shall /	A1.	Greet the visitor performing "Namaste"	A3'. Show the son where to hang coat		
can do in this scenario		(M1,M9,M12,P5,V5) [E]	A4'+A5'. Tell Mrs C the positions of		
Right: Alternative tasks	A2.	Ask the son whether he would like to take his coat off (V1)	needed objects in the environment,		
		[E]	knowing them a priori, or detecting		
	A3.	Take and hang son's coat (M2,M3,M4,M9,P1,P7) [H]	them by using markers.		
	A4.	Locate things as needed (reading glasses, shoes, coat, hat,	A7'. Locate and indicate objects		
		walking stick, sweets, cups) (M6,M10,P6,P7) [H]	needed for preparing the tray,		

A5 A6 A7 A8 A9 A1 A1 A1 A1 A1 A1 A1 A1 A1	 Bring things as needed (reading glasses, shoes, coat, hat, walking stick, sweets, cups) (M3,M4,M6,M9,M10,P1,P6) [H] Ask Mrs C and son how it can help with the tea (V2,V4) [E] Prepare and bring a tray with tea and sweets in the living room (M3,M4,M5,M6,M9,M10,P1,P6,P7) [H] Provide privacy to mother and son (M6,P4) [E] Provide information about the weather (P10,V7) [E] O. Suggest a walk and accompany them during the walk (M8,M10,P6,P9,V3,V6) [H] I. Help Mrs C to put coat on (M2,M3,M4,M9,P1,P2,P7) [H] Parke a photo of mother and son upon request (M7,P2,P5,P11) [E] S. Ask Mrs C how she felt about her son's visit (M14,P3,P8,V2,V4) [E] B. Remind Mrs C that the son will be coming again next week 	knowing their position in the environment, or using markers. Then suggest Mrs C to bring the tray with food to the table A5"+A7". Permanently attach a tray to the robot's chest to bring objects A10'. Suggest a walk. A11'. Indicate the position of the coat. A12'. Remind Mrs C to switch off the radio A12". Switch off the radio by connecting to the smart environment, or launching radio on its tablet A13'. Remind Mrs C to switch off the lights A13". Switch off the light by connecting to the smart environment.
A1	7. Ask the son to enter the date/time of next visit on the	
	touch screen (V1,V2,V4) [E]	
Left: Robot motor M1	. Coordinately move torso/ arms/ hands (A1)	- ALMotion
capabilities required M2	. Coordinately move base/ arms/ hands (A3,A11)	- ALMotion
Right: CorrespondingM3Pepper API (if any)	. Grasp objects (A3,A5,A7,A11)	 no dedicated module, it could be achieved with external libraries
M4	. Carry lightweight items (A3,A5,A7,A11)	- feasible if payload is <300 g
M5	. Carry heavyweight items (A7)	- not feasible
Me	. Navigate autonomously in the house (A4,A5,A7,A8)	- ALNavigation
M7	. Track moving objects / persons (A14)	- ALLandmarkDetection,
		ALColorBlobDetection,
		ALVisionRecognition,
		ALCloseObjectDetection
M8	. Follow moving objects / persons (A10)	- ALVisionRecognition,
		ALCloseObjectDetection,
		ALNavigation
MS	. Reach a target / person (A1,A3,A5,A7,A11)	- ALVisionRecognition,

			ALCloseObjectDetection,
			ALNavigation
	M10.	Avoid unexpected static or moving obstacles / persons	- ALMotion
		(A4,A5,A7,A10)	
	M11.	Turn on /off radio / TV /cassette player (A12)	- ALAudioPlayer
			For external devices, It could be
			achieved with a specific
			communication protocol
	M12.	Open doors / windows (by communicating with smart	- It could be achieved with a specific
		environment) (A1)	communication protocol
	M13.	Operate appliance (by communicating with smart	- It could be achieved with a specific
		environment) (A12,A13)	communication protocol
	M14.	Show feelings (A15)	- ALLeds, ALRobotPosture,
			ALAnimationPlayer
Left: Robot perceptual	P1.	Locate persons (distance and position) (A3,A5,A7,A11)	- ALPeoplePerception
capabilities required	P2.	Recognize posture, gesture, movements (A11,A14)	- no dedicated module, it could be
Right: Corresponding			achieved with external libraries
Pepper API (if any)	P3.	Recognize emotions (A15)	- ALMood
	P4.	Recognize actions (A8,A13)	- no dedicated module, it could be
			achieved with external libraries
	P5.	Recognize persons / faces (A1,A14)	- ALFaceDetection
	P6.	Recognize obstacles / uneven ground (A4,A5,A7,A10)	- ALLaser, ALSonar
	Ρ7.	Recognize/ Locate items (A3,A4.A7,A11)	- ALVisionRecognition
	P8.	Retrieve / store information (A15,A16)	- ALMemory
	P9.	Recognize dialogue context (A10)	- ALSpeechRecognition
	P10.	Recognize weather/ temperature (A9)	- no dedicated module, it could be
			checked the broadcast on internet
			or by communicating with the smart
			environment
	P11.	Take pictures <mark>(A14)</mark>	- ALPhotoCapture
Left: Robot verbal	V1.	Ask Yes/ No questions (A2,A17)	- ALDialog, ALSpeechRecognition,
capabilities involved			ALTextToSpeech, ALTabletService
Right: Corresponding	V2.	Ask multiple choice questions (A6,A15)	- ALDialog, ALSpeechRecognition,
Pepper API (if any)			ALTextToSpeech, ALTabletService
	V3.	Suggest / remind (A10,A16,A17)	- ALDialog, ALTextToSpeech,
			ALTabletService

	V4.	Context dependent chat (A6,A15,A16,A17)	- ALDialog, ALSpeechRecognition,
			ALTextToSpeech, ALTabletService
	V5.	Greet (A1)	- ALDialog, ALTextToSpeech
	V6.	Encourage/ praise (A10)	- ALDialog, ALTextToSpeech,
			ALTabletService
	V7.	Report information (A9,A16)	- ALMemory, ALTextToSpeech,
			ALTabletService
Which "qualitative" robot	R1.	Way of greeting –slight bow holds palms together	
behavior is expected to be	R2.	Keeps out of mother-son way	
culturally dependent	R3.	Provides privacy	
Which behavior is	T1.	Speaks with soft tone	
"quantitatively" different	T2.	Speaks in low volume	
depending con culture	Т3.	Stands not too close to Mrs C	
(volume and tone of voice,	T4.	Walks in low speed	
distance, velocity, etc)	T5.	Keeps acceptable distance from the visitor	

1.10 Mrs Chaterjee - Preparing for Dinner, Dinner Planning

Scenario name	Mrs Chaterjee - Preparing for dinner, Dinner planning			
Time of the day	Pre-dinner time			
General Description	 <> On Sunday her daughter , son in-law and granddaughter will be visiting for dinner . Now she needs to plan for dinner. She wants to make dahl (lentil dish), a cauliflower or maybe bindhi curry , (depends on what she can find), a simple chicken with potatoe curry and of course her signature mustard fish curry¹. She needs to call the Indian grocery shop and place an order. She also needs to call another store. Her granddaughter is still too small to have Hilsha fish but it is Mrs C's favourite dish and she cannot, not have HilshaShe asks her carer to help with the planning. (Calling the stores, ordering, making sure she has all the spices she will need, the specific cooking oil) Oh she also needs to order sweets, some sandesh and rasgulla². 			
Functional areas of the house involved	F1. Living room F2. Kitchen			
Relevant objects involved	 O1. Phone O2. Phone book O3. Brass utensils most probably brought from India O4. Wallet/credit card for ordering over the phone O5. Plates/glasses O6. Notepad 			
Relevant persons (in addition to user and caregiver)	B1. Store employee			
What a human (formal or informal) caregiver shall / can do in this scenario	 H1. Remind her that she is having family over and she needs to plan H2. Discuss the menu H3. What is needed for the different dishes H4. Go through the kitchen cabinets and or refrigerator and check what is needed and what is missing H5. Make a list of the missing items 			

	H6.	Bring the phone and phone book				
	H7.	Call the local Indian shops				
	H8.	Help in case she needs to find new phone numbers				
	H9.	Place the order				
	H10.	Help Mrs C with cooking				
	H11.	leep company				
	H12.	Offer to play music	Offer to play music			
	H13.	Lay the table (cutlery not placed next to individual plate matts but in the middle of table for those				
		who need them. Most eat with their right hand)				
Cultural knowledge	C1.	Indian dishes from the different parts of India				
involved (top level	C2.	Indian stores that source products from India				
concepts in the Cultural	C3.	Names of different dishes				
Knowledge hierarchy)	C4.	Names and uses of different utensils				
	C5.	Knowledge on Indian cooking				
	C6.	Knowledge of order of dishes to be served: start with dahl, t	hen vegetable dishes, then chicken and			
		ish curry, then sweets				
	C7.	Knowledge of favourite music and topics of conversation				
Which "qualitative"	D1.	Planning of dinner				
caregiver behavior is	D2.	Awareness about Indian stores and products	wareness about Indian stores and products			
expected to be culturally	D3.	Possibility that products cannot be purchased from one stor	e			
dependent	D4.	Awareness: they may speak in native language during the phone interaction				
	D5.	If regular customer, interaction will be slightly different (tone of voice, warmer)				
	D6.	ndirect style of communication				
Which behavior is	E1.	Polite and soft tone, low volume of voice				
"quantitatively" different	E2.	Moving about in calm slow manner				
depending on culture	E3.	Gestures are gentle and not too exaggerated				
(volume and tone of voice,	E4.	Being silent when an elder is talking				
distance, velocity, etc.)						
Left: What the robot shall /	A1.	Remind Mrs C that she is having family for lunch (P6,P7,V3)	A4'+A5'. Knowing the recipe and			
can do in this scenario		[E]	needed ingredients (A3) the robot			
Right: Alternative tasks	A2.	Recommend dishes (P6,V3,V5) [E]	walk with Mrs C and ask (Y/N) if			
	A3.	Provide recipes (P6,V4) [E]	ingredient X is available, making a list			
	A4.	Walk with Mrs C as she goes through her cabinets and	of the ones missing.			
		refrigerator (M6,M8,P1,P3,P4,V4,V5) [H]	A6'+A7'. Tell Mrs C the positions of			
	A5.	Keep notes for Mrs C (P6) [H]	needed objects in the environment,			

A6	Locate things as needed (phone, phone book, food, dishes,	knowing them a priori, or detecting
	kitchen tools,) (M5,M8,P4,P5) [H]	them by using markers.
A7.	Bring things when needed (phone, phone book, dishes,	A9'. Turn with the screen close to Mrs
	kitchen tools) (M2,M3,M5,M7,M8,P1,P4) [H]	C and place a Skypeout/whatsapp call
A8	Ask Mrs C if she needs any phone numbers (V1) [E]	to the shop.
A9	Place a phone call, saying "please hold on" and then asking	A10'. Ask Mrs C the expected time of
	Mrs C to talk (P6,V7,V9) [H]	delivery of the ingredients
A1). Store the information about the expected delivery of the	(speech/tablet) and remind her about
	ingredients and remind Mrs C about it. (P6,V3,V8) [H]	them.
A1	. Ask Mrs C if she is tired and suggest to have a rest for a	A13'. Suggest Mrs C how to lay the
	while (P2,V1,V3) [E]	table (by observing the action, and
A1	2. Ask Mrs C information about her favourite foods and food	suggesting position, eg. "to the right")
	preparation (M9,V2,V5) [E]	A13". Make general comments about
A1	 Help with laying the table (M1,M2,M3,M5,M7,M8,P4,P5) 	table preparation.
	[H]	A14'. Suggest Mrs C to bring the tray
A1	 Carry some food to the table on a tray 	with food to the table
	(M1,M2,M4,M5,M7,M8,P4,P5) [H]	A7"+A14". Permanently attach a tray
A1	5. Suggest Mrs C to play her favourite music, and play it	to the robot's chest to bring objects
	(M10,M11,P3,V3) E	A15'. Ask Mrs C if she wants to hear
		radio and the type of music. Then,
		reproduce the selected radio channel
Left: Robot motor M1	. Coordinately move base/ arms/ hands (A13,A14)	- ALMotion
capabilities required M2	. Grasp objects (A7,A13,A14)	- no dedicated module, it could be
Right: Corresponding		achieved with external libraries
Pepper API (if any) M3	. Carry lightweight items (A7,A13)	- feasible if payload is <300 g
M4	. Carry heavyweight items (A14)	- not feasible
M5	Navigate autonomously in the house (A6,A7,A13,A14)	- ALNavigation
Mé	. Follow moving objects / persons (A4)	- ALVisionRecognition,
		ALCloseObjectDetection,
		ALNavigation
M7	. Reach a target / person (A7,A13,A14)	- ALVisionRecognition,
		ALCloseObjectDetection,
		ALNavigation
M	Avoid unexpected static or moving obstacles / persons	- ALIVIOTION
M	. Show feelings (A12)	- ALLeds, ALRobotPosture.

			ALAnimationPlayer
	M10.	Turn on radio / TV / cassette player (A15)	- ALAudioPlayer
			For external devices, It could be
			achieved with a specific
			communication protocol
	M11.	Operate appliance (by communicating with smart	- It could be achieved with a specific
		environment) (A15)	communication protocol
Left: Robot perceptual	P1.	Locate persons (distance and position) (A4,A7)	- ALPeoplePerception
capabilities required	P2.	Recognize emotions (A11)	- ALMood
Right: Corresponding	P3.	Recognize actions (A4,A15)	- no dedicated module, it could be
Pepper API (if any)			achieved with external libraries
	P4.	Recognize obstacles / uneven ground (A4,A6,A7,A13,A14)	- ALLaser, ALSonar
	P5.	Recognize/ Locate items (A6,A13,A14)	- ALVisionRecognition
	P6.	Retrieve / store information (A1,A2,A3,A5,A9,A10)	- ALMemory
	P7.	Recognize persons / faces (A1)	- ALFaceDetection
Left: Robot verbal	V1.	Ask Yes/ No questions (A8,A11)	- ALDialog, ALSpeechRecognition,
capabilities involved			ALTextToSpeech, ALTabletService
Right: Corresponding	V2.	Ask multiple choice questions (A12)	- ALDialog, ALSpeechRecognition,
Pepper API (if any)			ALTextToSpeech, ALTabletService
	V3.	Suggest / remind (A1,A2,A10,A11,A15)	- ALDialog, ALTextToSpeech,
			ALTabletService
	V4.	List instructions (A3)	- ALDialog, ALTextToSpeech,
			ALTabletService
	V5.	Context dependent chat (A2,A4,A12)	- ALDialog, ALSpeechRecognition,
			ALTextToSpeech, ALTabletService
	V6.	Greet (A9)	 ALDialog, ALTextToSpeech
	V7.	Encourage/ praise (A9)	- ALDialog, ALTextToSpeech,
			ALTabletService
	V8.	Report information (A10)	- ALMemory, ALTextToSpeech,
			ALTabletService
	V9.	Place a phone call (A9)	- no dedicated module, it could be
			achieved with external libraries
Which "qualitative" robot	R1.	Helps with planning of dinner	
behavior is expected to be	R2.	Contacts Indian stores for different products	
culturally dependent	R3.	Helping with laying the table as per H11	

	R4.	Welcoming the family
	R5.	Help with serving the food on a tray
	R6.	Offer and encourage people to have food and then some more
	R7.	Asks indirect questions
Which behavior is	T1.	Speaks with soft tone
"quantitatively" different	T2.	Speaks in low volume
depending con culture	T3.	Be silent when needed
(volume and tone of voice,	T4.	Walks in low speed
distance, velocity, etc)	T5.	Not too many gestures
	T6.	Stands not too close to Mrs C

2. Mrs Smith - Script

Mrs Smith is a 75 year old English lady, a former school teacher who recently moved in sheltered	1.	Common for older adults to have pets
accommodation in Cambridge UK along with her beloved cat named 'tiger' ¹ . Her husband died	2.	Family expectations
two years ago. She has only one son who lives with his new wife just over 3 hours away by car. Mrs Smith worked as a secondary school science teacher for nearly 40 years before she retired. Mrs Smith has high cholesterol and a thyroid problem for which she takes regular medication. Recently, she developed cataract in both eyes which has affected her vision although the doctor	3. 4.	Common foods for breakfast tea, toast, cereal/porridge, boiled eggs, fried/grilled bacon, sausage, baked beans, tomatoes Dressing. Common for women of her generation to dress smartly and wear
told her they are not ready to be operated on. Her visual impairment has resulted in losing her confidence leaving her home and she tends to stay indoors more and more.		makeup irrespective of whether they will go out or not
Mrs Smith always liked reading, something which she cannot easily do now and as a result she has to borrow audio books from the local library. She finds this fact frustrating and slightly depressing. Six months ago she had an accident by tripping over an uneven pavement, resulting in a fractured femur. Although she is now physically healed, she remains frightened in case she has another accident especially since her vision has deteriorated.		
Today is Sunday and her son is due to visit her. He tries to visit her every Sunday although he does not always have the time to do so. He occasionally telephones her although she never does because she does not want to bother him ² .		
She has a boiled egg with toast around 9am for breakfast ³ while listening to the news on the radio. She would really like to have some bacon and sausages but it is more difficult for her to make it. She would also like to read the newspaper as she always has done but of course her vision does not permit it these days.		
After breakfast, she gets dressed (she puts on a skirt and a nice blouse), sprays a little bit of perfume, combs her hair and puts some make up on ⁴ . On Friday she had her monthly appointment with her hairdresser and she looks good. She had her hair coloured and her nails done.		
Mrs Smith was raised as an Anglican Protestant. However, as an adult, and during her science degree, she challenged her faith and religious beliefs and decided to abandoned religion. She does however, have strong humanistic values which she believes are compatible to Christianity and other religions such as Buddhism and Hinduism.		

She doesn't belong to any church groups nor attends mass. She likes to read or listen to audio books about religion especially those that combine her love of science and ethics with religion. She is also an avid viewer of TV programmes that debate current ethical issues from religious and political perspectives.	5.	Sunday roast lunch: usually will be beef, lamb or chicken with gravy, boiled vegetables and roasted potatoes and Yorkshire pudding. Yorkshire pudding is not a sweet dish.
She expects her son to arrive at 1 nm and they will go to the local pub for Sunday roast lunch ⁵ He	6.	Cultural orientation to time
arrives on time ⁶ . She puts on her coat, gloves, takes her handbag, umbrella and scrabble for them to play ^{7,8} . They spend together the next couple of hours and by 3pm they return to her home. He	7.	Common to share a board game such as scrabble
has to rush back so they hug and kiss (air kiss on one chick) and they say goodbye ⁹ .	8.	Not uncommon that the son visited without his wife
She comes in, takes off her shoes, puts on her slippers, sits on her armchair and covers herself	9.	Greeting
with her blanket. She turns on the radio and soon she closes her eyes and takes a nap. Tiger	10.	Formal arranging of social visits
almost 15 years. She loves to caress her cat and relax.	11.	Cream tea: Afternoon tea with warm scones, cream and jam. Describe
It is afternoon now and she is expecting her friend, Mrs Brown. They had arranged this visit the		differences with 'high tea' and 'tea' which refers to light dinner.
last time they talked over the phone, a month ago ¹⁰ . It will be lovely to see her. They will have cream tea together ¹¹ . Her friend brings in scones, cream and strawberry jam and Mrs Smith prepares tea. She will first put on the kettle and boil the water. She will take out her best china cups, cream holder, matching teapot, nice napkins, spoons/knife and her favourite tea cosy ¹² .	12.	Tea cosy is a tea pot cover normally knitted or made with thick woollen material designed to keep the tea warm in the pot.
She will slowly fill the tea pot with boiled water to warm it. She then empties the tea pot, refills it with hot water and adds 3 tea bags. She will let it brew for a few minutes covering the nice teapot with the tea cosy.	13.	Light dinner, often a cold salad or sandwiches
They will sit at the table and talk about the old days when they were working together. They will also discuss her friend's recent holiday in Spain. They take a walk in the garden and after a couple of hours Mrs Brown is ready to go. They give each other a formal embrace and they promise to talk soon on the phone and arrange another visit.		
After her friend's departure Mrs Smith turns the radio on and listens to some classical music.		
It is time for dinner now and Mrs Smith decides to have something light. She will have a ham salad ¹³ with some lettuce, cucumber, tomato and a slice of bread with butter.		
After dinner, despite her eyesight problems, she will watch her favourite TV programme, 'country file', feed Tiger and take her evening pills.		

2.1 Mrs Smith – Morning Routine, Breakfast

Scenario name	Mrs Smith - Breakfast		
Time of the day	Morning		
General Description	<> Mrs S has a boiled egg with toast around 9am for breakfast ¹ while listening to the news on the radio. She would really like to have some bacon and sausages but it is more difficult for her to make it. She would also like to read the newspaper and she always did but of course her vision does not permit it these days. So she hears the news on the radio, and of course she also hears the weather report ³ . She will also find her tablets and put them on the table in order not to forget to take them when she finishes her breakfast. Another routine would be to feed Tiger ² her cat and since he is a very important cat he gets his food first!	 Common foods for breakfast (tea, toast, cereal/porridge, boiled eggs, fried/grilled bacon, sausage, baked beans, tomatoes,) Many English people, especially older people living alone are very attached to their animals (cats or dogs). In general, English people are interested on the weather. They frequently start a conversation with how the weather is today before they speak about other things. Or they may greet someone and then comment on the weather. 	
Functional areas of the house involved	F1. Kitchen		
Relevant objects involved	 O1. Plates/glasses O2. Pot for tea O3. Toaster O4. Cutlery O5. Table O6. Chair O7. Radio O8. Cat's water and food dish 		
Relevant persons (in addition to user and caregiver)	B1. No-one		
What a human (formal or informal) caregiver shall / can do in this scenario	 H1. Say Good morning H2. Ask what Mas S would like for breakfast H3. Recommend different options H4. Get all the ingredients for making breakfast H5. Use the appropriate plates/glasses /utensils H6. Cook breakfast 		
	H7. Serve breakfast		
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	H8. Ask whether she would like to h	nave tea or coffee or juice	
	H9. Make tea of coffee		
	H10. Switch on the radio		
	H11. Ask Mrs S what radio channel sł	ne would like to listen	
	H12. Reminder her about her medica	ation	
	H13. Fill cat's dish with cat food		
	H14. Wash cat's water dish and fill up	o with clean water	
Cultural knowledge	C1. English breakfast dishes and pre	eferences	
involved (top level	C2. Names of different English brea	kfast dishes	
concepts in the Cultural	C3. Knowledge of English cooking		
Knowledge hierarchy)	C4. Names of different English radio	channels and programmes	
Which "qualitative"	D1. English breakfast and what it co	ould entail	
caregiver behaviour is	D2. Awareness of Mrs S preference	es (having toast, or eggs or ba	con , tea /coffee etc)
expected to be culturally	D3. Awareness of where Mrs S likes	s to take her breakfast	
dependent	D4. Preferences of news/radio char	nnels	
	D5. Understand the importance of	the cat to Mrs S.	
	D6. Polite and respectful way of ad	dressing Mrs S. 'Please' and '	Thank you' prefix most dialogue.
Which behavior is	E1. Normal volume of voice		
"quantitatively" different	E2. Moving about at normal speed	, looking efficient	
depending on culture	E3. Not many gestures		
(volume and tone of voice,			
distance, velocity, etc.)			
Left: What the robot shall /	A1. Greet Mrs S, saying "Good Mor	ning" and asking her how	A5'+A6'. Tell Mrs S the positions of
can do in this scenario	she is feeling today (M5,M9,P1,	P2,P4,V2,V4,V5) [E]	needed objects in the environment,
Right: Alternative tasks	A2. Provide a list of choices that Mr	s S can have for breakfast	knowing them a priori, or detecting
	and ask her what she wants for	breakfast (P7,V2,V3) [E]	them by using markers.
	A3. Praise on eating a healthy and b	balanced diet (V4,V6) [E]	A7'+A8'. Locate and indicate objects
	A4. Ask Mrs S if she needs help for p	preparing breakfast (P3,V1)	needed for preparing the tray,
	[E]		knowing their position in the
	A5. Locate objects as needed (plate	s, glasses, pots, cat food)	environment, or using markers
	(M4,M6,P5,P6) [H]		Suggest Mrs S to bring the tray with
	 Bring objects as needed (plates, 	, glasses, pots, cat food)	food to the table
	(M1,M2,M4,M5,M6,P1,P5) [H]		A6"+A8". Permanently attach a tray
	A7. Prepare a tray with food (M1,M)	12,P6) [H]	to the robot's chest to bring objects

	A8. Bring the tray with food to Mrs S to the table	A10'. Ask Mrs S if she wants to hear
	(M1,M2,M3,M4,M5,M6,P1,P5,P6) [H]	the news. If yes, connect to her
	A9. Remind her to take her medication if needed (P7,P8,V3) [E]	favorite (known a priori) internet
	A10. Respond to her request to hear the news on the radio	radio channel.
	(M7,M8) [H]	A10". Ask Mrs S if she wants to hear
	A11. Keep company to Mrs S while eating (M5,P2,P3,V4) [E]	radio and the type of music. Then,
	A12. Ask Mrs S if she enjoyed her breakfast and comment on	reproduce the selected radio channel
	her dietary choices (M9,P2,P3,V1,V2,V4) [H]	A12'. Provide general comments
	A13. Remind her to feed her cat and ask her if she needs help in	about breakfast and diet
	bringing cat food (P7,V1,V3,V4,V6) [E]	A14'. Check email or events from apps
	A14. Inform Mrs S if she has any text /telephone messages and	such as Whatsapp / Viber
	read them to her (M8,P7,V7) [H]	A16'. Suggest Mrs S to check supplies
	A15. Provide information about the weather (P7,P9,V4,V7) [E]	and if missing to generate a reminder
	A16. Provide information on supplies (e.g. cat food) and	for buying/ordering them.
	whether they need to order/buy (M8,P7,V4,V7) [H]	
Left: Robot motor	M1. Grasp objects (A6,A7,A8)	- no dedicated module, it could be
capabilities required		achieved with external libraries
Right: Corresponding	M2. Carry lightweight items (A6,A7,A8)	- feasible if payload is <300 g
Pepper API (if any)	M3. Carry heavyweight items (A8)	- not feasible
	M4. Navigate autonomously in the house (A5,A6,A8)	- ALNavigation
	M5. Reach a target / person (A1,A6,A8,A11)	- ALVisionRecognition,
		ALCloseObjectDetection,
		ALNavigation
	M6. Avoid unexpected static or moving obstacles / persons	- ALMotion
	(A5,A6,A8)	
	M7. Turn on radio / TV /cassette player (A10)	- ALAudioPlayer
		For external devices, It could be
		achieved with a specific
		communication protocol
	M8. Operate appliance (by communicating with smart	- It could be achieved with a specific
	environment) (A10,A14,A16)	communication protocol
	M9. Show feelings (A1,A12)	- ALLeds, ALRobotPosture,
		ALAnimationPlayer
Left: Robot perceptual	P1. Locate persons (distance and position) (A1,A6,A8)	- ALPeoplePerception
capabilities required	P2. Recognize emotions (A1,A11,A12)	- ALMood
Right: Corresponding	P3. Recognize actions (A4,A11,A12)	- no dedicated module, it could be

Penner API (if any)			achieved with external libraries
	P4.	Recognize persons / faces (A1)	- Al FaceDetection
	P5.	Recognize obstacles / uneven ground (A5 A6 A8)	- Allaser, AlSonar
	P6.	Recognize / Locate items (A5 A7 A8)	- Al VisionRecognition
	P7.	Retrieve / store information (A2 A9 A13 A14 A15 A16)	- Al Memory
	P8.	Keep track of time (A9)	- no dedicated module, it could be
			achieved with different solutions
	P9.	Recognize weather/ temperature (A15)	- no dedicated module, it could be
	_		checked the broadcast on internet
			or by communicating with the smart
			environment
Left: Robot verbal	V1.	Ask Yes/ No questions (A4,A12,A13)	- ALDialog, ALSpeechRecognition,
capabilities involved			ALTextToSpeech, ALTabletService
Right: Corresponding	V2.	Ask multiple choice questions (A1,A2)	- ALDialog, ALSpeechRecognition,
Pepper API (if any)			ALTextToSpeech, ALTabletService
	V3.	Suggest / remind (A2,A9,A13,A16)	- ALDialog, ALTextToSpeech,
			ALTabletService
	V4.	Context dependent chat (A1,A3,A11,A12,A13,A15,A16)	- ALDialog, ALSpeechRecognition,
			ALTextToSpeech, ALTabletService
	V5.	Greet (A1)	 ALDialog, ALTextToSpeech
	V6.	Encourage/ praise (A3,A13)	 ALDialog, ALTextToSpeech,
			ALTabletService
	V7.	Report information (A14,A15,A16)	- ALMemory, ALTextToSpeech,
			ALTabletService
Which "qualitative" robot	R1.	Polite way of asking and interacting	
behavior is expected to be	R2.	Waits for her instructions	
culturally dependent	R3.	Awareness of Mrs S preferences (having toast, or eggs or ba	acon , tea /coffee etc)
	R4.	Awareness of where Mrs S likes to take her breakfast	
	R5.	Preferences of news/radio channels	
Which behavior is	T1.	Speaks with normal tone	
"quantitatively" different	T2.	Speaks in normal volume	
depending con culture	T3.	Walks in normal speed	
(volume and tone of voice,	T4.	Not too many gestures	
distance, velocity, etc)	T5.	Stands not too close to Mrs S	

2.2 Mrs Smith - Morning Routine, Dressing

Scenario name	Mrs Smith - Morning routine, Dressing		
Time of the day	Morning		
General Description	<> After breakfast, she gets dressed (she puts on a skirt and a nice blouse ¹), sprays a little bit of perfume, combs her hair and puts some make up on. On Friday she had her monthly appointment with her hairdresser and she looks good. She had her hair coloured and her nails done. 1. Items of western clothing 1. Items of western c		
Functional areas of the	F1. Bedroom - Bed		
house involved	F2. Bedroom – Wardrobe		
	F3. Bedroom – Drawers		
	F4. Bedroom - dressing table		
Relevant objects involved	O1. Blouse, skirts		
	O2. Perfume		
	O3. Comb		
	O4. Make up		
Relevant persons	B1. No-one		
(in addition to user and			
caregiver)			
What a human (formal or	H1. Asks Mrs S if she would like help with choosing her clothes		
informal) caregiver shall /	H2. Recommend clothes and propose combinations		
can do in this scenario	H3. Help her find her clothes		
	H4. Help INITS S to wear clothes, if she needs help (e.g., by holding, handing, zipping)		
	H5. Praise Mrs S for her look and beautiful blouse		
	H6. Suggest to wear any jeweis it she would like		
	H7. Suggest a perfume		
	Ho. Bring compand shoes and handhag		
Cultural knowledge	H7. Recommend shoes and handbag		
involved (ten level	C1. Western items of clothing C2. Culture of gotting ready (manicures, nodicures, bair etc)		
concepts in the Cultural	cz. culture of getting ready (manicules, pedicules, nair etc)		
Knowledge biorgroby			
knowledge hierarchy)			

Which "qualitative"	D1.	Ask permission to enter bedroom and offer help. Maintain	a distance from Mrs S
caregiver behavior is	D2.	Praise in a discrete way (Is it appropriate to praise?)	
expected to be culturally	D3.	Time taken to get dressed (not too long)	
dependent	D4.	Looking good, having hair and nails done is considered imp	portant
	D5.	Remember her favourite clothes and perfumes	
Which behavior is	E1.	Polite and normal tone of voice	
"quantitatively" different	E2.	Moving about at normal speed, looking efficient	
depending con culture			
(volume and tone of voice,			
distance, velocity, etc.)			
Left: What the robot shall /	A1.	Locate objects if needed (skirt, blouse, perfume, comb)	A1'+A2'. Tell Mrs S the positions of
can do in this scenario		(M5,M8,P5,P6) [H]	needed objects in the environment,
Right: Alternative tasks	A2.	Bring objects if needed (skirt, blouse, perfume, comb)	knowing them a priori, or detecting
		(M2,M3,M4,M5,M6,M8,P1,P5) [H]	them by using markers.
	A3.	Recommend clothes and propose some combinations	A2". Permanently attach a tray to the
		(P4,P7,V1,V2,V3) [E]	robot's chest to bring objects
	A4.	Open wardrobe with clothes	A4'. Open the wardrobe, by controlling
		(M1,M2,M6,M7,M8,M9,P5,P6) [H]	its sliding doors by communicating with
	A5.	Ask Mrs S if she needs help while getting dressed	the smart home
		(P2,P4,V1,V4) [E]	A6'. Bring a hanger (on wheels) close to
	A6.	Help Mrs S to get dressed by holding the clothes	Mrs S, and then bring it back to its place
	. –	(M1,M2,M3,M6,M8,P1,P2,P5,P6) [H]	again.
	A7.	Switch on/off the lights when asked (M10) [H]	A7'. Connect to automatic controls of
	A8.	Provide privacy to Mrs S (M5,P4) [E]	lights.
	A9.	Show interest and ask information about English way of	
	A10	dressing (M11,P7,V1,V2,V4) [E]	
	A10.	Make recommendations (on wearing jeweis, pertume,	
	A 1 1	Shoes, handbag) (P7,P8,V3,V4,V5) [E]	
	AII.		
	A12	(VIII, CJ, V4, VJ) [C] Pemind Mrs S her monthly appointment with the	
	AIZ.	hairdresser (P7 V3 V4) [F]	
Left: Robot motor	M1	Coordinately move base/arms/ bands (A4 A6)	- Al Motion
capabilities required	M2	Grasp objects (A2,A4,A6)	- no dedicated module, it could be
Right: Corresponding			achieved with external libraries

Pepper API (if any)	M3.	Carry lightweight items (A2,A6)	- feasible if payload is <300 g
	M4.	Carry heavyweight items (A2)	- not feasible
	M5.	Navigate autonomously in the house (A1,A2,A8)	- ALNavigation
	M6.	Reach a target / person (A2,A4,A6)	- ALVisionRecognition,
			ALCloseObjectDetection, ALNavigation
	M7.	Pull objects (A4)	- no dedicated module, it could be
			achieved with external libraries
	M8.	Avoid unexpected static or moving obstacles / persons (A1,A2,A4,A6)	- ALMotion
	M9.	Open doors / windows (by communicating with smart	- It could be achieved with a specific
		environment) (A4)	communication protocol
	M10.	Operate appliance (by communicating with smart	- It could be achieved with a specific
		environment) (A7)	communication protocol
	M11.	Show feelings (A9,A11)	- ALLeds, ALRobotPosture,
			ALAnimationPlayer
Left: Robot perceptual	P1.	Locate persons (distance and position) (A2,A6)	- ALPeoplePerception
capabilities required Right: Corresponding	P2.	Recognize posture, gesture, movements (A5,A6)	 no dedicated module, it could be achieved with external libraries
Pepper API (if any)	P3.	Recognize emotions (A11)	- ALMood
	P4.	Recognize actions (A3,A5,A8)	 no dedicated module, it could be achieved with external libraries
	P5.	Recognize obstacles / uneven ground (A1,A2,A4,A6)	- ALLaser, ALSonar
	P6.	Recognize/ Locate items (A1,A4,A6)	- ALVisionRecognition
	P7.	Retrieve / store information (A3,A9,A10,A12)	- ALMemory
	P8.	Recognize weather/ temperature (A10)	- no dedicated module, it could be
			checked the broadcast on internet or
			by communicating with the smart environment
Left: Robot verbal	V1.	Ask Yes/ No guestions (A3,A5,A9)	- ALDialog, ALSpeechRecognition.
capabilities involved			ALTextToSpeech, ALTabletService
Right: Corresponding	V2.	Ask multiple choice questions (A3,A9)	- ALDialog, ALSpeechRecognition,
Pepper API (if any)			ALTextToSpeech, ALTabletService
	V3.	Suggest / remind (A3,A10,A12)	- ALDialog, ALTextToSpeech,
			ALTabletService
	V4.	Context dependent chat (A5,A9,A10,A11,A12)	- ALDialog, ALSpeechRecognition,
			ALTextToSpeech, ALTabletService

	V5.	Encourage/ praise (A10,A11)	 ALDialog, ALTextToSpeech, ALTabletService
Which "qualitative" robot	R1.	Way of dressing	
behavior is expected to be	R2.	Type of clothes depending on the occasion	
culturally dependent	R3.	May have to leave the room when Mrs S is changing	
	R4.	Provide privacy	
Which behavior is	T1.	Speaks with normal tone	
"quantitatively" different	T2.	Speaks with normal volume	
depending con culture	Т3.	Walks in normal speed	
(volume and tone of voice,			
distance, velocity, etc)			

2.3 Mrs Smith – Pre Lunch Routine, Pray

Scenario name	Mrs Smith – Pre lunch routine, Pray
Time of the day	Morning
General Description	<> Mrs S was raised as an Anglican Protestant. However, as an adult, and during her science degree, she challenged her faith and religious beliefs and decided to abandoned religion. She does however, have strong humanistic values which she believes are compatible to Christianity and other religions such as Buddhism and Hinduism. She doesn't belong to any church groups nor attends mass. She likes to read or listen to audio books about religion especially those that combine her love of science and ethics with religion. She is also an avid viewer of TV programmes that debate current ethical issues from religious and political perspectives.
Functional areas of the	F1. Living room
house involved	
Relevant objects involved	O1. Audio books O2. TV /radio
Relevant persons (in addition to user and caregiver)	B1. nobody
What a human (formal or	H1. Source the audio books
informal) caregiver shall / can do in this scenario	H2. Engage in discussions about her readings
Cultural knowledge	C1. Religion and culture
involved (top level concepts in the Cultural Knowledge hierarchy)	C2. The intersection of ethics, religion, science and politics
Which "qualitative"	D1. Showing respect for Mrs S values and religious beliefs
caregiver behaviour is expected to be culturally dependent	D2. Awareness of her interest in religious and ethical discussions on radio and TV
Which behaviour is	E1. Speak in normal tone of voice

"quantitatively" different	E2.	Keeping quiet whist she is listening/watching a programme	
depending on culture			
(volume and tone of voice,			
distance, velocity, etc.)			
Left: What the robot shall /	A1.	Reach Mrs S and ask her if she would like to choose an	A3'. Connect to internet radio TV and
can do in this scenario		online book or TV programme from his tablet list	let Mrs C watch her favorite TV program
Right: Alternative tasks		(M1,M2,M3,P1,P2,P3,P4,V1) [E]	via the Pepper's screen.
	A2.	In case, show to Mrs S the list of available programmes (P5,V3,V5) [E]	
	A3.	Switch on/off TV/radio accordingly (M4,M5) [H]	
	A4.	Provide privacy, staying silent in the room during the radio/TV show (M1,P2) [E]	
	A5.	Read an audiobook upon her request (M6,V6) [E]	
	A6.	Comment on the chosen TV/Radio show or audiobook	
		(M6,P5,P6,V2,V4) [E]	
Left: Robot motor	M1.	Navigate autonomously in the house (A1,A4)	- ALNavigation
capabilities required	M2.	Reach a target / person (A1)	- ALVisionRecognition,
Right: Corresponding			ALCloseObjectDetection, ALNavigation
Pepper API (if any)	M3.	Avoid unexpected static or moving obstacles / persons (A1)	- ALMotion
	M4.	Turn on radio / TV /cassette player (A3)	- ALAudioPlayer
			For external devices, It could be
			achieved with a specific
			communication protocol
	M5.	Operate appliance (by communicating with smart	- It could be achieved with a specific
		environment) (A3)	communication protocol
	M6.	Show feelings (A5,A6)	- ALLeds, ALRobotPosture,
			ALAnimationPlayer
Left: Robot perceptual	P1.	Locate persons (distance and position) (A1)	- ALPeoplePerception
capabilities required	P2.	Recognize actions (A1,A4)	- no dedicated module, it could be
Right: Corresponding			achieved with external libraries
Pepper API (if any)	P3.	Recognize persons / faces (A1)	- ALFaceDetection
	P4.	Recognize obstacles / uneven ground (A1)	- ALLaser, ALSonar
	P5.	Retrieve / store information (A2,A6)	- ALMemory
	P6.	Recognize dialogue context (A6)	- ALSpeechRecognition

Left: Robot verbal	V1.	Ask Yes/ No questions (A1)	- ALDialog, ALSpeechRecognition,
capabilities involved			ALTextToSpeech, ALTabletService
Right: Corresponding	V2.	Ask multiple choice questions (A6)	- ALDialog, ALSpeechRecognition,
Pepper API (if any)			ALTextToSpeech, ALTabletService
	V3.	Suggest / remind (A2)	 ALDialog, ALTextToSpeech,
			ALTabletService
	V4.	Context dependent chat (A6)	- ALDialog, ALSpeechRecognition,
			ALTextToSpeech, ALTabletService
	V5.	Report information (A2)	- ALMemory, ALTextToSpeech,
			ALTabletService
	V6.	Read an audiobook (A5)	- ALAudioPlayer
Which "qualitative" robot	R1.	Showing respect to Mrs S values and beliefs	
behavior is expected to be			
culturally dependent			
Which behavior is	T1.	Speaks with soft tone	
"quantitatively" different	T2.	Speaks in low volume	
depending con culture	Т3.	Walks in low speed	
(volume and tone of voice,			
distance, velocity, etc)			

2.4 Mrs Smith – Lunch Routine, Son, social activity

Scenario name	Mrs Smith – Lunch routine, Son, social activity
Time of the day	Lunch time
General Description	 <> Today is Sunday and her son is due to visit her. He tries to visit her every Sunday although he does not always has the time to do so. He occasionally telephones her although she never does, because she does not want to bother him¹. She expects her son to arrive at 1pm and they will go to the local pub for Sunday roast lunch². He arrives on time³. She puts on her coat, gloves, takes her handbag, umbrella and scrabble for them to play^{4,5}. They spend together the next couple of hours and by 3pm they return to her home. He has to rush back so they hug and kiss (air kiss on one chick) and they say goodbye⁶. <i>Family expectations</i> <i>Local pub/ Sunday roast lunch: usually will be beef, lamb or chicken with gravy, boiled vegetables and roasted potatoes and Yorkshire pudding. Yorkshire pudding is not a sweet dish.</i> <i>Cultural orientation to time</i> <i>Common to share a board game such as scrabble</i> <i>Not uncommon that the son visited without his wife</i>
Functional areas of the	F1 Entrance
house involved	F2. Living room
Relevant objects involved	O1.ShoesO2.CoatO3.GlovesO4.Coat standO5.UmbrellaO6.Umbrella holderO7.HandbagO8.Board gameO9.Food
Relevant persons	B1. Son (informal carer)
What a human (formal or	H1. Inform her that her son arrived

informal) caregiver shall /	H2.	Open the door and greet son			
can do in this scenario	H3.	Welcome him indoors			
	H4.	Help her put on her shoes, or give the shoes			
	H5.	Give the gloves , umbrella and handbag			
	H6.	Remind her to take the board game			
	H7.	Bring and give the board game			
	H8.	lelp her put on her coat			
	H11.	Provide some privacy to mother and son			
Cultural knowledge	C1.	Greeting customs			
involved (top level	C2.	Level of communication and detail of exchange of information	on		
concepts in the Cultural	C3.	Son /parent relationship in English culture			
Knowledge hierarchy)	C4.	Custom of playing a game together			
	C5.	Family expectations (e.g. son may visit alone without his wife	e, mother may not call very often so		
		that she will not bother)			
	C6.	Length of visit (based on a time schedule; to some extend time	med for example 1 to 4)		
	C7.	Time orientation (son reaches on time, they leave the house	soon after and so on)		
	C8.	Culture of English pub and pub lunch on Sunday			
	C9.	Sunday roast			
Which "qualitative"	D1.	Way of greeting with family members			
caregiver behaviour is	D2.	Distance from visitor and minimal involvement in the son-mother conversation			
expected to be culturally	D3.	Constraint expression of emotion between mother-son			
dependent	D4.	Touching not desirable for non-family members			
Which behaviour is	F1	Polite and brief conversation			
"quantitatively" different	F2	Carer keeps some physical and conversational distance from mother-son			
depending on culture	F3	Moving about in a discrete manner	Moving about in a discrete manner		
(volume and tone of voice	E3. F4	Not much gesturing			
distance, velocity, etc.)	L				
Left: What the robot shall /	A1.	Comments on Mrs S smart appearance (P3, P5, V4) [F]	A3'. Open door by communicating		
can do in this scenario	A2.	Remind Mrs S that her soon will come to visit her at 13:00	with the smart environment. Ask the		
Right: Alternative tasks		(P8.V3.V6) [E]	visitor to come closer for shaking		
	A3.	Open the door and greet the visitor (shake hand)	hands		
		(M1,M4,M6,M7,M8,P1,P2,P5,P6,V5) [H]	A7'+A8'. Tell Mrs S the positions of		
	A4.	Welcome the son indoor (M9,V1,V2,V4) [E]	needed objects in the environment.		
	A5.	Inform Mrs S that her son arrived (M6,M7,P1,P6,V6) [E]	knowing them a priori, or detecting		
	A6.	Leave privacy to mother and son (M4,M7,P6) [E]	them by using markers.		

	A7.	Locate things as needed (shoes, coat, gloves, umbrella,	A8". Permanently attach a tray to the
		etc) (M4,M7,P6,P7) [H]	robot's chest to bring objects
	A8.	Bring things as needed (shoes, coat, gloves, umbrella, etc)	A12'. Bring a hanger (on wheels) with
		(M2,M3,M4,M6,M7,P1,P6) [H]	coat close to Mrs S, and then bring it
	A9.	Provide information about the weather (P10,V4,V6) [E]	back to its place again.
	A10.	Remind Mrs S to take a board game and suggest games	
		that they can play together (P4,P8,V3,V6) [E]	
	A11.	Take a photo of mother and son (M5,M9,P1,P11) [E]	
	A12.	Help Mrs S to put the coat on (M1,M2,M3,M6,P1,P2,P7)	
		[H]	
	A13.	While still at home, if mother and son change their plans,	
		find other pubs in the area and offer recommendations	
		(distance from their location, quality of food, maybe	
		TripAdvisor rating) (P8,P9,P12,V3,V4,V6) [E]	
	A14.	When Mrs S is back, ask her about her lunch and her son's	
		visit (M9,P3,V1,V2,V4) [E]	
	A15.	Ask Mrs S when she will see the son again and store the	
		information about son's next visit (P8,V2,V4) [E]	
Left: Robot motor	M1.	Coordinately move base/ arms/ hands (A3,A12)	- ALMotion
capabilities required	M2.	Grasp objects (A8,A12)	 no dedicated module, it could be
Right: Corresponding			achieved with external libraries
Pepper API (if any)	M3.	Carry lightweight items (A8,A12)	 feasible if payload is <300 g
	M4.	Navigate autonomously in the house (A3,A6,A7,A8)	- ALNavigation
	M5.	Track moving objects / persons (A11)	- ALLandmarkDetection,
			ALColorBlobDetection,
			ALVisionRecognition,
			ALCloseObjectDetection
	M6.	Reach a target / person (A3,A5,A8,A12)	- ALVisionRecognition,
			ALCloseObjectDetection,
			ALNavigation
	M7.	Avoid unexpected static or moving obstacles / persons (A3,A5,A6,A7,A8)	- ALMotion
	M8.	Open doors / windows (by communicating with smart	- It could be achieved with a specific
		environment) (A3)	communication protocol
	M9.	Show feelings (A4,A11,A14)	- ALLeds, ALRobotPosture,
			ALAnimationPlayer

Left: Robot perceptual	P1.	Locate persons (distance and position) (A3,A5,A8,A11,A12)	- ALPeoplePerception
capabilities required	P2.	Recognize posture, gesture, movements (A3,A12)	- no dedicated module, it could be
Right: Corresponding			achieved with external libraries
Pepper API (if any)	P3.	Recognize emotions (A1,A14)	- ALMood
	P4.	Recognize actions (A10)	- no dedicated module, it could be
			achieved with external libraries
	P5.	Recognize persons / faces (A1,A3)	- ALFaceDetection
	P6.	Recognize obstacles / uneven ground (A3,A5,A6,A7,A8)	- ALLaser, ALSonar
	P7.	Recognize/ Locate items (A7,A12)	- ALVisionRecognition
	P8.	Retrieve / store information (A2,A10,A13,A15)	- ALMemory
	P9.	Recognize dialogue context (A13)	- ALDialog, ALAudioPlayer
	P10.	Recognize weather/ temperature (A9)	- no dedicated module, it could be
			checked the broadcast on internet
			or by communicating with the smart
			environment
	P11.	Take pictures (A11)	- ALPhotoCapture
	P12.	Use search engines for finding information (A13)	- ALTabletService
Left: Robot verbal	V1.	Ask Yes/ No questions (A4,A14)	- ALDialog, ALSpeechRecognition,
capabilities involved			ALTextToSpeech, ALTabletService
Right: Corresponding	V2.	Ask multiple choice questions (A4,A14,A15)	- ALDialog, ALSpeechRecognition,
Pepper API (if any)			ALTextToSpeech, ALTabletService
	V3.	Suggest / remind (A2,A10,A13)	- ALDialog, ALTextToSpeech,
			ALTabletService
	V4.	Context dependent chat (A1,A4,A9,A13,A14,A15)	- ALDialog, ALSpeechRecognition,
			ALTextToSpeech, ALTabletService
	V5.	Greet (A3)	 ALDialog, ALTextToSpeech
	V6.	Report information (A2,A5,A9,A10,A13)	- ALMemory, ALTextToSpeech,
			ALTabletService
Which "qualitative" robot	R1.	Way of greeting –extends right hand	
behavior is expected to be	R2.	Provides privacy	
culturally dependent	R3.	Behaves in a very polite manner	
Which behavior is	T1.	Speaks with normal tone	
"quantitatively" different	T2.	Speaks in normal volume	
depending con culture	Т3.	Walks in normal speed	
(volume and tone of voice,	T4.	Stands not too close to Mrs S	

distance, velocity, etc)	T5.	Keeps acceptable distance from the visitor
	T6.	Not too many gestures
	T7.	Is silent when needed

2.5 Mrs Smith - After Lunch Routine, Nap

Scenario name	Mrs Smith - After Lunch routine->nap		
Time of the day	Early afternoon		
General Description	<> Mrs S comes in, takes off her shoes, puts on her slippers, sits on her armchair and covers herself with her blanket. She turns the radio on and soon she closes her eyes and takes a nap. Tiger ^{1,2} snuggles up on her lap. She loves her cat, he is her closest friend and they have been together for almost 15 years. She loves to caress her cat which she finds very relaxing. 1. Her cat 2. Common to have a pet		
Functional areas of the house involved	F1. Living room or bedroom/living area		
Relevant objects involved	 O1. Armchair O2. Slippers O3. Foot stool O4. Blanket O5. Radio O6. Tiger the cat (considered as a "moving object" as it has no capability to explicitly interact with the robot) 		
Relevant persons (in addition to user and caregiver)	B1. No-one		
What a human (formal or informal) caregiver shall / can do in this scenario	 H1. Help her put the slippers on H2. Bring the blanket H3. Know the radio channel she would usually have play in the background H4. If Tiger is outside call him to come in and encourage him to sit on her lap H5. Don't disturb her nap but keep track of time H6. If she usually takes a nap for 30 minutes, make sure that she gently wakes up and don't let her stay in the chair for hours. 		
Cultural knowledge involved (top level concepts in the Cultural Knowledge hierarchy)	C1. Pet ownership and relationship		

Which "qualitative"	D1.	Individuality and independence	
caregiver behaviour is	D2.	Attitude towards her pet	
expected to be culturally	D3.	Politeness as a key value	
dependent			
M/high hohouigur is	F 1	Normal values of voice	
which behaviour is	E1.		
quantitatively unterent	EZ.	Respection tone of voice	
(volume and tone of voice	E3.	Respecting her personal space	
(volume and tone of volce,	E4.	Not the menu sectures	
distance, velocity, etc.)	E5.	Not too many gestures	
Left: What the robot shall /	A1.	Suggest to Mirs S a short nap (M4,M8,P1,P3,P5,V3) [E]	A3 +A4 . Tell Wrs S the positions of
can do in this scenario	A2.	Ask if Mrs S is warm enough (P2,P3,P4,P10,V1,V2,V4) [E]	needed objects in the environment,
Right: Alternative tasks	A3.	Locate objects as needed (blanket, slippers)	knowing them a priori, or detecting
		(M3,M5,P6,P7) [H]	them by using markers.
	A4.	Bring objects as needed (blanket, slippers)	A4". Permanently attach a tray to the
		(M1,M2,M3,M4,M5,P1,P6) [H]	robot's chest to bring objects
	A5.	Ask Mrs S if she would like some background music	A6'. Connect to her favorite (known a
		(P4,V1,V3) [E]	priori) internet radio channel.
	A6.	Switch radio on/off, putting the appropriate channel (M6,M7,P8) [H]	A5'+A6". Ask Mrs S if she wants to hear radio and the type of music. Then,
	A7.	Ask Mrs S if she prefer to be woken up after some time	reproduce the selected radio channel
		and provide privacy (M3,V1) [E]	A9'. Call Tiger the cat, and encourage
	A8.	Keep track of time and eventually gently wake up Mrs S if	him to sit on her lap
		she sleeps for more than the required time (P9,V3,V5) [E]	
	A9.	Locate Tiger the cat, and encourage him to sit on her lap	
		(M3,M5,P6,P7,V5) [H]	
	A10.	Remind Mrs S to move, to feed the cat and ask if she	
		needs any help (M8,P4,P8,V3,V4,V5) [E]	
Left: Robot motor	M1.	Grasp objects (A4)	- no dedicated module, it could be
capabilities required			achieved with external libraries
Right: Corresponding	M2.	Carry lightweight items (A4)	 feasible if payload is <300 g
Pepper API (if any)	M3.	Navigate autonomously in the house (A3,A4,A7,A9)	- ALNavigation
	M4.	Reach a target / person (A1,A4)	- ALVisionRecognition,
			ALCloseObjectDetection, ALNavigation
	M5.	Avoid unexpected static or moving obstacles / persons	- ALMotion
		(A3,A4,A9)	

	M6.	Turn on radio / TV /cassette player (A6)	- ALAudioPlayer
			For external devices, It could be
			achieved with a specific
			communication protocol
	M7.	Operate appliance (by communicating with smart	- It could be achieved with a specific
		environment) <mark>(A6)</mark>	communication protocol
	M8.	Show feelings (A1,A10)	- ALLeds, ALRobotPosture,
			ALAnimationPlayer
Left: Robot perceptual	P1.	Locate persons (distance and position) (A1,A4)	- ALPeoplePerception
capabilities required	P2.	Recognize posture, gesture, movements (A2)	- no dedicated module, it could be
Report API (if any)	50	Recognize emotions (A1 A2)	- Al Mood
	г <i>Э</i> . D/I	Recognize actions (A2 A5 A10)	- no dedicated module, it could be
	14.		achieved with external libraries
	P5	Recognize persons / faces (A1)	- Al FaceDetection
	P6	Recognize obstacles / uneven ground (A3 A4 A9)	- Allaser AlSonar
	P7	Recognize Jocate items (A3 A9)	- Al Vision Recognition
	P8.	Retrieve / store information (A6 A10)	- Al Memory
	P9	Keen track of time (A8)	- no dedicated module, it could be
			achieved with different solutions
	P10.	Recognize weather/ temperature (A2)	- no dedicated module, it could be
			checked the broadcast on internet or
			by communicating with the smart
			environment
Left: Robot verbal	V1.	Ask Yes/ No questions (A2,A5,A7)	- ALDialog, ALSpeechRecognition,
capabilities involved			ALTextToSpeech, ALTabletService
Right: Corresponding	V2.	Ask multiple choice questions (A2)	- ALDialog, ALSpeechRecognition,
Pepper API (if any)			ALTextToSpeech, ALTabletService
	V3.	Suggest / remind (A1,A5,A8,A10)	- ALDialog, ALTextToSpeech,
			ALTabletService
	V4.	Context dependent chat (A2,A10)	- ALDialog, ALSpeechRecognition,
			ALTextToSpeech, ALTabletService
	V5.	Encourage/ praise (A8,A9,A10)	- ALDialog, ALTextToSpeech,
			ALTabletService
Which "qualitative" robot	R1.	Cat/Mrs S relationship	

behavior is expected to be	R2.	Which radio programme she has on and what she listens to
culturally dependent		
Which behavior is	T1.	Speaks with normal tone
"quantitatively" different	T2.	Speaks in normal volume
depending con culture	Т3.	Walks in normal speed
(volume and tone of voice,	T4.	Stands not too close to Mrs S
distance, velocity, etc)		

2.6 Mrs Smith - After Lunch Routine, Social Activities (drinking tea, visitors, talking)

Scenario name	Mrs Smith - After lunch routine, Social activities (drinking tea, visitors	s, talking)		
Time of the day	Early afternoon			
General Description	 <> It is afternoon now and Mrs S is expecting her friend, Mrs. Brown. They had arranged this visit the last time they talked over the phone, a month ago¹. It will be lovely to see her. They will have cream tea together². Her friend brings in scones, cream and strawberry jam and Mrs. Smith prepares tea³. She will first put on the kettle and boil the water. She will take out her china cups, cream holder, matching teapot, nice napkins, spoons/knife and her favourite tea warmer. She will slowly fill the tea pot with boiled water and warm it. She will then pour in some fresh boiled water and the tea bags. She will let it brew covering the nice teapot with the tea warmer⁴. They will sit at the table and talk about the old days when they were working together. They will also discuss about her recent holiday in Spain. They will walk together in the garden and after a couple of hours Mrs Brown is ready to go. They hug and they plan to talk soon on the phone and arrange another visit⁵. 	 Formal arranging of social visits Cream tea:. Afternoon tea with warm scones, butter and jam. Describe differences with 'high tea' and 'tea' referring to light dinner Relationships and expectations (what will visitor will bring or not) English tea rituals, emphasis on the china used, tea pots, preparation of tea, tea warmer Level of communication, exchange of details and information. 		
Functional areas of the	F1. Living room F2. Kitchen – cabinets, refrigerator			
Relevant objects involved	O1. Door O2. China Cups, spoons O3. Tea pot O4. Tea warmer O5. Scones, cream, jam			
Relevant persons (in addition to user and caregiver)	B1. Friend			
What a human (formal or informal) caregiver shall /	H1. Open the door for visitor and greet appropriatelyH2. Welcome the visitor			

can do in this scenario	H3.	Ask whether she would like to take her coat off	
	H4.	Take her coat and hang it or place it to the appropriate place	2
	H5.	Help in the kitchen by getting the cups, plates, etc	
	H6.	Help by making the tea	
	H7.	Help warm the scones	
	H8.	Help bring everything to the table	
Cultural knowledge	C1.	English way of making tea	
involved (top level	C2.	Cream Tea, High Tea, Tea as light dinner; knowing distinction	าร
concepts in the Cultural	C3.	Scones, jam, cream, butter (appropriate foods for a cream te	ea)
Knowledge hierarchy)	C4.	China cups, tea pot, tea warmer, tea strainer	
	C5.	Organized visit well in advance	
	C6.	Expected to offer one item, e.g. tea and maybe have some b	iscuits
	C7.	What is expected from the visitor	
	C8.	Level of communication, topics of discussion	
	C9.	Organizing the next visit and marking their calendar	
Which "qualitative"	D1.	Proper way of greeting	
caregiver behavior is	D2.	Properly addressing the visitor	
expected to be culturally	D3.	Properly addressing Mrs S	
dependent	D4.	Distance from visitor and no- involvement in discussion	
	D5.	Helping in the kitchen, knowing where things are kept	
	D6.	Provide privacy	
	D7.	Knowing what cups/tea pot etc to use	
	D8.	Make the tea	
	D9.	Warm the scones	
	D10.	Washes dishes	
	D11.	Touching not desirable for non-family members	
Which behavior is	E1.	Polite and soft tone of voice	
"quantitatively" different	E2.	Keep some distance for non-family members	
depending con culture	E3.	Move gently and with low velocity	
(volume and tone of voice,	E4.	Smile	
distance, velocity, etc.)			
Left: What the robot shall /	A1.	Open the door and greet the visitor (slight bow)	A1'. Open the door by communicating
can do in this scenario		(M1,M6,M7,M8,M9,P1,P5,P6,V5) [H]	with the smart environment and
Right: Alternative tasks	A2.	Welcome the visitor indoor, showing with the hand the	greet the visitor (slight bow)
		way to the living room (M2,M6,M8,M10,P6,P10,V1,V2,V4)	A3'. Show the visitor where to hang

	[E]	coat and suggest to sit
A	. Take visitor's coat and suggest her to sit	A4'. Suggest the visitor to put the box
	(VIZ, VIS, VI4, VI7, VI8, P1, P2, P0, P7, V3) [II] Offer to take from Mrs R (friend/visitor) the package that	$\Delta 7' \pm \Delta 8'$ Toll Mrs S the positions of
	she has brought (assuming boy with scopes) and take it	needed objects in the environment
	(M3 M4 M7 M8 P1 P2 P6 P7 V1) [H]	knowing them a priori or detecting
Δ	Inform Mrs S that her friend has arrived (M7 M8 P6 V4 V7)	them by using markers
	[E]	A9'+A10'. Locate and indicate objects
A	Ask Mrs S how it can help with the tea (P9.V1.V2) [E]	needed for preparing the tray.
A	Locate things as needed (cups, scones, pots, spoons)	knowing their position in the
	(M6,M8,P6,P7) [H]	environment, or using markers.
A	Bring things as needed (cups, scones, pots, spoons)	Suggest Mrs S to bring the tray with
	(M3,M4,M6,M7,M8,P1,P6) [H]	food to the table
A	. Prepare a tray with tea and sweets (M3,M4,P7) [H]	A8"+A10". Permanently attach a tray
A	0. Bring the tray in the living room	to the robot's chest to bring objects
	(M3,M5,M6,M7,M8,P1,P6) [H]	
A	1. Comment about the food (E.g. Scones look delicious or	
	recognize the band/make of jam and comment if it is	
	consider good?) (P9,V4) [E]	
A	2. Provide privacy to IVIrs S and friend (IVI6,P4) [E]	
A	(M10 P3 V3 V6) [F]	
А	4. In case, retrieve her calendar, suggest a date and store the	
	information (P8,V3,V4)[E]	
A	5. Remind both of any occasions that they would like to	
	celebrate or recommend things to do at the next visit	
	(P8,V3,V4) [E]	
Left: Robot motor	1. Coordinately move torso/ arms/ hands (A1)	- ALMotion
capabilities required N	2. Coordinately move base/ arms/ hands (A2,A3)	- ALMotion
Right: Corresponding N	3. Grasp objects (A3,A4,A8,A9,A10)	- no dedicated module, it could be
Pepper API (if any)		achieved with external libraries
N	4. Carry lightweight items (A3,A4,A8,A9)	- feasible if payload is <300 g
N	5. Carry heavyweight items (A10)	- not feasible
N	Navigate autonomously in the house	- ALNavigation
	(A1,A2,A7,A8,A10,A12)	

	N/17	Peach a target / percen (A1 A2 A4 AE A9 A10)	AllVisionPosognition
	1017.	Reach a larger / person (A1,A3,A4,A3,A6,A10)	- ALVISIONRECOgnicion,
			ALCIOSEODJECIDETECTION,
			ALNavigation
	M8.	Avoid unexpected static or moving obstacles / persons	- ALMotion
		(A1,A2,A3,A4,A5,A7,A8,A10)	
	M9.	Open doors / windows (by communicating with smart	- It could be achieved with a specific
		environment) (A1)	communication protocol
	M10.	Show feelings (A2,A13)	- ALLeds, ALRobotPosture,
			ALAnimationPlayer
Left: Robot perceptual	P1.	Locate persons (distance and position) (A1,A3,A4,A8,A10)	- ALPeoplePerception
capabilities required	P2.	Recognize posture, gesture, movements (A3,A4)	- no dedicated module, it could be
Right: Corresponding			achieved with external libraries
Pepper API (if any)	P3.	Recognize emotions (A13)	- ALMood
	P4.	Recognize actions (A12)	- no dedicated module, it could be
			achieved with external libraries
	P5.	Recognize persons / faces (A1)	- ALFaceDetection
	P6.	Recognize obstacles / uneven ground	- Allaser, AlSonar
		(A1 A2 A3 A4 A5 A7 A8 A10)	
	P7.	Recognize/ Locate items (A3,A4,A7,A9)	- ALVisionRecognition
	P8.	Retrieve / store information (A14,A15)	- ALMemory
	P9.	Recognize dialogue context (A6,A11)	- ALSpeechRecognition
	P10.	Have knowledge of the map of the environment (A2)	- no dedicated module, it could be
			achieved with different solutions
Left: Robot verbal	V1.	Ask Yes/ No guestions (A2,A4,A6)	- ALDialog, ALSpeechRecognition,
capabilities involved			ALTextToSpeech, ALTabletService
Right: Corresponding	V2.	Ask multiple choice guestions (A2,A6)	- ALDialog, ALSpeechRecognition,
Pepper API (if any)			ALTextToSpeech, ALTabletService
	V3.	Suggest / remind (A3,A13,A14,A15)	- ALDialog, ALTextToSpeech,
			ALTabletService
	V4.	Context dependent chat (A2,A5,A11,A14,A15)	- ALDialog, ALSpeechRecognition,
			ALTextToSpeech, ALTabletService
	V5.	Greet (A1)	- ALDialog, ALTextToSpeech
	V6.	Encourage/ praise (A13)	- ALDialog, ALTextToSpeech
			ALTabletService
	V7	Report information (A5)	- Al Memory Al TextToSpeech
	• / .		Al Tablet Service

Which "qualitative" robot	R1.	Proper Way of greeting
behavior is expected to be	R2.	Properly addressing the visitor
culturally dependent	R3.	Distance from visitor and non-involvement in discussion
	R4.	Helping in the kitchen, knowing where things are kept
	R5.	Bring tray with tea and scones, etc to the living room
Which behavior is	T1.	Speaks in low volume
"quantitatively" different	T2.	Speaks with soft voice
depending con culture	Т3.	Move in low speed
(volume and tone of voice,	T4.	Stands not too close to Mrs C
distance, velocity, etc)	T5.	Keeps acceptable distance from the visitor
	T6.	Smile frequently

2.7 Mrs Smith – Preparing for Dinner, Dinner

Scenario name	Mrs Smith – Preparing for dinner, Dinner		
Time of the day	Dinner time		
General Description	<> It is time for dinner now and Mrs S decides to have 1. This is a normal Sunday evening dinner for		
	something light. She will have a nice fresh ham salad ¹ ; some people of her generation.		
	lettuce, cucumber, tomato and slices of ham. She will also add a		
	slice of bread with butter.		
	She will watch her favourite TV programme, 'country file', feed		
	Tiger and take her evening pills.		
Functional areas of the	F1. Living room		
house involved	F2. Kitchen		
Relevant objects involved	O1. Plates/glasses		
	O2. Medication		
	O3. TV & TV remote		
Relevant persons	P1. No-one		
(in addition to user and			
caregiver)			
What a human (formal or	H1. Get all the ingredients for making the salad		
informal) caregiver shall /	H2. Prepare salad		
can do in this scenario	H3. Use the appropriate plates/glasses /utensils		
	H4. Bring the medication		
	H5. Feed the cat		
	H6. Switch on the TV/ find TV programme		
Cultural knowledge	C1. Knowledge of tradition for late cooked lunch on Sunday (the most important family eating event of		
involved (top level	the week), followed by simple, usually cold dish for dinner such as salad or sandwiches.		
concepts in the Cultural	C2. Names of different TV channels and programmes		
Knowledge hierarchy)	C3. Knowledge of English cooking		
Which "qualitative"	D1. Help to prepare the light dinner		
caregiver behavior is	D2. Responds to Mrs S preferences (having bread and butter with her salad)		
expected to be culturally	D3. Help to carry the food in the living room where it is normal to have Sunday dinner while watching		
dependent	TV		
	D4. Feed her beloved cat		

Which behavior is	E1.	Polite and normal volume of voice		
"quantitatively" different	E2.	2. Moving about in normal speed and manner		
depending on culture	E3.	Gestures , few and not too exaggerated		
(volume and tone of voice,				
distance, velocity, etc.)				
Left: What the robot shall /	A1.	Ask Mrs S if she needs any help with preparing dinner	A3'+A4'. Tell Mrs S the positions of	
can do in this scenario		(P2,P3,V2,V4) [E]	needed objects in the environment,	
Right: Alternative tasks	A2.	Praise Mrs S on eating a healthy diet (M10,V4,V5) [E]	knowing them a priori, or detecting	
	A3.	Locate object as needed (plates,glasses,pills)	them by using markers.	
		(M4,M7,P4,P5) [H]	A5'. Locate and indicate objects needed	
	A4.	Bring objects as needed (plates,glasses,pills)	for preparing the tray, knowing their	
		(M1,M2,M4,M6,M7,P1,P4) [H]	position in the environment, or using	
	A5.	Bring a tray with food in the living room, following Mrs S	markers. Suggest Mrs S to bring the tray	
		(M1,M3,M4,M7,P4,P5) [H]	with food to the table	
	A6.	Keep company to Mrs S while eating (M10,P2,V1,V2,V4)	A5". Permanently attach a tray to the	
		[E]	robot's chest to bring objects	
	A7.	Switch on/off TV when required (M8,M9) [H]	A7'. Switch on/off TV by connecting to	
	A8.	Remind Mrs S to take her medication and to feed her cat	the smart environment.	
		(P2,P6,V3) [E]	A7". Connect to internet TV and let Mrs	
	A9.	Ask information about recipes and comment on her	S watch her favorite TV program via the	
		dietary choices (M10,P6,V1,V2,V4) [E]	Pepper's screen.	
Left: Robot motor	M1.	Grasp objects (A4,A5)	- no dedicated module, it could be	
capabilities required			achieved with external libraries	
Right: Corresponding	M2.	Carry lightweight items (A4)	 feasible if payload is <300 g 	
Pepper API (if any)	M3.	Carry heavyweight items (A5)	- not feasible	
	M4.	Navigate autonomously in the house (A3,A4)	- ALNavigation	
	M5.	Follow moving objects / persons (A5)	- ALVisionRecognition,	
			ALCloseObjectDetection, ALNavigation	
	M6.	Reach a target /person (A4)	- ALVisionRecognition,	
			ALCloseObjectDetection, ALNavigation	
	M7.	Avoid unexpected static or moving obstacles / persons (A3,A4,A5)	- ALMotion	
	M8.	Turn on radio / TV /cassette player (A7)	- ALAudioPlayer	
			For external devices, It could be	
			achieved with a specific	
			communication protocol	

	M9.	Operate appliance (by communicating with smart	- It could be achieved with a specific
		environment) (A7)	communication protocol
	M10.	Show feelings (A2,A6,A9)	- ALLeds, ALRobotPosture,
			ALAnimationPlayer
Left: Robot perceptual	P1.	Locate persons (distance and position) (A4,A5)	- ALPeoplePerception
capabilities required	P2.	Recognize actions (A1,A6,A8)	- no dedicated module, it could be
Right: Corresponding			achieved with external libraries
Pepper API (if any)	P3.	Recognize persons / faces (A1)	- ALFaceDetection
	P4.	Recognize obstacles / uneven ground (A3,A4,A5)	- ALLaser, ALSonar
	P5.	Recognize/ Locate items (A3)	- ALVisionRecognition
	P6.	Retrieve / store information (A8,A9)	- ALMemory
Left: Robot verbal	V1.	Ask Yes/ No questions (A6,A9)	- ALDialog, ALSpeechRecognition,
capabilities involved			ALTextToSpeech, ALTabletService
Right: Corresponding	V2.	Ask multiple choice questions (A1,A6,A9)	- ALDialog, ALSpeechRecognition,
Pepper API (if any)			ALTextToSpeech, ALTabletService
	V3.	Suggest / remind (A8)	- ALDialog, ALTextToSpeech,
			ALTabletService
	V4.	Context dependent chat (A1,A2,A6,A9)	- ALDialog, ALSpeechRecognition,
			ALTextToSpeech, ALTabletService
	V5.	Encourage/ praise (A2)	- ALDialog, ALTextToSpeech,
			ALTabletService
Which "qualitative" robot	R1.	Stay with her in the living room where she is having Sunday dinner	
behavior is expected to be	R2.	Do not disturb during dinner as she is watching the TV	
culturally dependent			
Which behavior is	T1.	Speaks with soft tone	
"quantitatively" different	T2.	Speaks in normal volume	
depending con culture	Т3.	Walks in low speed	
(volume and tone of voice,	T4.	Stands not too close to Mrs S	
distance, velocity, etc)	T5.	Not too many gestures	

$2.8\ Mrs\ Smith$ - After dinner routine, Reading/audio/TV/music

Scenario name	Mrs Smith - After dinner routine, Reading/audio/TV/music		
Time of the day	After dinner		
General Description	 Secently, Mrs S developed cataract in both eyes which have affected her vision although the doctor told her they are not ready to be operated on. Her visual impairment has resulted in losing her confidence leaving her home and she tends to stay indoors more and more. Mrs Smith always liked reading, something which she cannot easily do now and as a result she has to borrow audio books from the local library¹. She finds this fact frustrating and slightly depressing. After her friend's departure Mrs S turns the radio on and listens to some classical music². After dinner, despite her eyesight problems, she will watch her favourite TV programme, 'country file',³ feed Tiger and take her evening pills. 		
Functional areas of the house involved	F1. Living room F2. Bedroom		
Relevant objects involved	O1. TVO2. RadioO4. Remote controlO6. Audio bookO8. Armchair		
Relevant persons (in addition to user and caregiver)	B1. No-body		
What a human (formal or informal) caregiver shall /	 H1. Help her switch on the radio or TV and find the channel of her choice H2. Start the audio book from where she left off 		
can do in this scenario	H3. Increase/decrease the volume as needed in different devices (TV, audio book, radio)		

	H4.	Read to her		
	H5.	Keep company		
	H6.	Encourage her to read at least a few pages using a magnifying glass or reading light		
	H7.	Receive e-mail alerts from the library when new audio books come in		
	H8.	Find and suggest online reading resources according to her i	nterests and favourite author	
Cultural knowledge	C1.	Knowledge that reading science/ ethics/ philosophy type of books, listening to classical music and		
involved (top level		watching TV programmes about the English countryside is part of Mrs S cultural identity		
concepts in the Cultural	C2.	Knowing her favourite channels and TV programs and reminding her when they are on		
Knowledge hierarchy)	C3.	Knowing her favourite classical music composers		
	C4.	Knowing her favourite authors		
	C5.	Knowledge about the system of public libraries and resource	25	
Which "qualitative"	D1.	Asking politely if she will need help with any of the activities (starting the TV or the radio, finding the		
caregiver behaviour is		channel)		
expected to be culturally	D2.	Ask whether Mrs S would like some company or she would p	prefer to be alone	
dependent	D3.	Polite encouragement to read and/or listen to her audio boo	ok	
Which behaviour is	E1.	Polite and normal tone of voice		
"quantitatively" different	E2.	Move with normal speed in the house		
depending con culture				
(volume and tone of voice,				
distance, velocity, etc.)				
Left: What the robot shall /	A1.	Remind Mrs S that her favourite TV show is on (P4,P7,V3)	A2'. Connect to internet Tv/radio and	
can do in this scenario		[E]	let Mrs C listen to her favorite radio	
Right: Alternative tasks	A2.	Switch on/off TV/radio and choose appropriate channel	program via the Pepper's	
		/volume (M6,M7,P7) [H]	loudspeakers/tablet.	
	A3.	Provide privacy (M3,M5,P5) [E]	A6'+A7'. Tell Mrs S the positions of	
	A4.	Ask Mrs S if she would like it to read an audiobook or listen	needed objects in the environment,	
		some music (V2,V4,V5) [E]	knowing them a priori, or detecting	
	A5.	Find online resources for audiobooks (P7,P8,V3) [E]	them by using markers.	
	A6.	Locate things as needed (book, glasses, remote)	A7". Permanently attach a tray to the	
		(M3,M5,P5,P6) [H]	robot's chest to bring objects	
	A7.	Bring things as needed (book, glasses, remote)		
		(M1,M2,M3,M4,M5,P1,P5) [H]		
	A8.	Read the chosen audiobook (M8,V7) [E]		
	A9.	Encourage Mrs S to listen to her audio-book or to read few		
		pages of a book (M8,P2,P3,V5) [E]		

	A10.	Remind Mrs S that she has received e-mails from the	
		library about their new book arrivals (P7,V6) [E]	
	A11.	Keep company (M8,P2,V1,V2,V4) [E]	
Left: Robot motor	M1.	Grasp objects (A7)	- no dedicated module, it could be
capabilities required			achieved with external libraries
Right: Corresponding	M2.	Carry lightweight items (A7)	- feasible if payload is <300 g
Pepper API (if any)	M3.	Navigate autonomously in the house (A3,A6,A7)	- ALNavigation
	M4.	Reach a target / person (A7)	- ALVisionRecognition,
			ALCloseObjectDetection,
			ALNavigation
	M5.	Avoid unexpected static or moving obstacles / persons (A3,A6,A7)	- ALMotion
	M6.	Turn on radio / TV /cassette player (A2)	- ALAudioPlayer
			For external devices, It could be
			achieved with a specific
			communication protocol
	M7.	Operate appliance (by communicating with smart	- It could be achieved with a specific
		environment) (A2)	communication protocol
	M8.	Show feelings (A8,A9,A11)	- ALLeds, ALRobotPosture,
			ALAnimationPlayer
Left: Robot perceptual	P1.	Locate persons (distance and position) (A7)	- ALPeoplePerception
capabilities required	P2.	Recognize emotions (A9,A11)	- ALMood
Right: Corresponding	P3.	Recognize actions (A9)	- no dedicated module, it could be
Pepper API (if any)			achieved with external libraries
	P4.	Recognize persons / faces (A1)	- ALFaceDetection
	P5.	Recognize obstacles / uneven ground (A3,A6,A7)	- ALLaser, ALSonar
	P6.	Recognize/ Locate items (A6)	- ALVisionRecognition
	P7.	Retrieve / store information (A1,A2,A5,A10)	- ALMemory
	P8.	Use search engines for finding information (A5)	- ALTabletService
Left: Robot verbal	V1.	Ask Yes/ No questions (A11)	- ALDialog, ALSpeechRecognition,
capabilities involved			ALTextToSpeech, ALTabletService
Right: Corresponding	V2.	Ask multiple choice questions (A4,A11)	- ALDialog, ALSpeechRecognition,
Pepper API (if any)			ALTextToSpeech, ALTabletService
	V3.	Suggest / remind (A1,A5)	- ALDialog, ALTextToSpeech,
			ALTabletService

	V4.	Context dependent chat (A4,A11)	- ALDialog, ALSpeechRecognition,
			ALTextToSpeech, ALTabletService
	V5.	Encourage/ praise (A4,A9)	 ALDialog, ALTextToSpeech,
			ALTabletService
	V6.	Report information (A10)	- ALMemory, ALTextToSpeech,
			ALTabletService
	V7.	Read audiobook (A8)	- AlAudioPlayer
Which "qualitative" robot	R1.	Asking politely	
behaviour is expected to be	R2.	Reminding politely	
culturally dependent	R3.	Offering items gently (gentle gestures)	
	R4.	Provide privacy	
Which behaviour is	T1.	Speaks with normal tone	
"quantitatively" different	T2.	Speaks in normal volume	
depending con culture	Т3.	Walks in normal speed	
(volume and tone of voice,			
distance, velocity, etc)			

3. Mrs Yamada – Script

	-
Mrs Yamada is a 75 years old Japanese lady who used to perform a tea ceremony and Ikebana-Japanese flower arrangement- in Kobe Japan, for 40 years. Her husband is a Japanese calligraphy teacher at schools in Osaka and stays with her in Kobe only during weekends. She has one son and one daughter who are both married and live in Tokyo. Her daughter's husband is Korean and the family go to Seoul instead of Kobe for holidays every years, while her son's family visit Mrs Yamada at least during the Obon holidays in the summer and New Year's holidays in winter. They try to visit her more often, but it is too difficult to manage the long journey and high expenses for the trip from Tokyo to Kobe.	 Common food for breakfast (rice, miso soup, green tea, baked fish, boiled vegetables, fruits, yogurt) Fermented beans Routine in Japanese care house
Mrs Yamada was diagnosed with thyroid cancer 7 years ago, and had a total thyroidectomy. After the operation, she was prescribed thyroid hormone replacement tablets which she takes every morning. Since she often forgot to take the replacement, her husband and her son try to check every day by phone call, but they also forget to check it sometimes. She feels very tired and cold without the hormone. Depending on her physical conditions, she needs to take Vitamin D and Calcium as well. Her doctor asked to see her once in 3 months at his hospital in Tokyo to check her after care, but she cannot manage the journey by herself.	
As a result of her operation, she sometimes suffers from depression. She misses her family more than usual when she feels depressed. Her husband recently suggested that she stays in a care facility during the weekdays so that she is not alone and at the same time she gets the care she needs. She moved into a care home recently.	
Today for breakfast ¹ she has green tea, baked salmon, miso soup, rice, boiled vegetables, and fruits. She does not like Natto ² so she does not take it always. She always has breakfast in the dining room with the other residents. The carer workers prepare the trays of the breakfast and tea.	
The elderly people like to have their own jobs so some help the carers and some open the curtains. Mrs Yamada will find her tablets and put them on the table in order not to forget to take them when she finishes her breakfast. After eating the breakfast, she has her vital signs checked ³ in the lounge. The nurse and the carer check her breathing, blood pressure, body temperature, heart rate, and so on.	

After the vital checks, she goes into her room for dressing. Mrs Y had many Kimono⁴ from several years ago but she has no more chances to put them on, so she chose the good ones and gave them to her daughter and son's wife. She reworked some scarfs, drawstring bags with rest of them.

After moving to a care house, she puts easy-to-wear⁵ clothes but sometimes she enjoys adding scarf. She wears a blouse and a long skirt then chooses one scarf made of Kimono cloth. She then combs her hair nicely.

After dressing Mrs Yamada will change the water of a flower vase and pour water into a small cup. Then she will put the vase beside the portrait of the deceased and put the cup in front of the portrait on a small table in the corner of her bedroom. The table is covered with a white cloth and on it there are a small shelf⁶ with a portrait, the vase, a holder of an incense, a holder of a candle, and a bell. She will light an incense and a candle, then ring a bell once. She will spend there a few minutes, sitting on the chair, with her hands close together and closed eyes. She thought of her brother in heaven and talked to him about recent life then asked him to watch out for her safety.

Today Mrs Y woke up with a little bit of cold. She calls her carer to help to ask her doctor to give her medicine⁷. Mrs Y goes asks her carer to close the door of her room to get dressed.

After she dressed, the carer opened the door and tells her that her friend Aya is here to visit.

Mrs Y has hobbies such as doing Origami and fancywork. Although it gets difficult for her to do dexterous manipulation, they enjoy looking at her previous works and sometimes Aya asks Mrs Y to teach how to do it.

Today Mrs Y teaches Aya how to make decorative banner because Aya's grandchild wanted to have it very much. Aya brings her Origami⁸ and Mrs Y also has nice desined Origami so they share pieces Origami to make the banner.

Aya brings some sweets to enjoy with Mrs Y who thanks her and makes Japanese Gyokuro tea. She boiled water and poured some into an empty pot and then poured the hot water from the pot into cups to warm them. She puts some leaves of Gyokuro into the pot and re-fills it with the hot water from the cups and waits for two minutes⁹. They enjoyed tea and sweets and make piece of decorative banner together.

- 4. Japanese traditional dresses
- 5. In Japanese care house, they don't have so much choices of dressing. They put simple ones and don't seem to care about clothes so much. They in many cases have only one wardrobe in a curtained area in one room that other elderly also stay.
- 6. Example of the portrait with a vase, an incense stick, a candle, a small cup, and a bell. (a purple bottle beside the portrait has ashes of the deceased but we don't need this bottle in our scenario, I think)



- 7. The carer in HISUISUI says that Japanese elderly trust the doctors very much so always ask doctors to give some medicine or some advice
- 8. Origami work of decorative banner



9. Gyokuro is traditional Japanese green tea and it needs water that is not too hot. It is very reasonable manner to pour boiled water into a pot then cups to warm them and decrease the heat of water a little. It is now mid-morning, she would like to listen to a radio, having Japanese green tea. She boils water then puts some leaves of tea into a teapot then pours hot water in the pot.

She turns the radio on then listen to her favourite programs. She listens to some news and enjoys some music. The program is for elderly people so music is not recent pop music but Japanese ballads¹⁰.

After listening to the radio, she decides to go down the first floor to watch TV. She liked to watch NHK¹¹. She will watch the news and cooking program for a while. She will then go back to her room and talk with her children on the phone. They have their regular time, and she or they will call every day.

Mrs Y eats lunch in the dining room on the first floor with other residents. They have a fixed schedule for lunch. It is her role to bring wet towels¹² from a kitchen and put them on the tables for everybody before lunch. Others have other roles such as cleaning the table with a kitchen cloth and open the curtains.

Today's lunch¹³ is rice, miso soup, backed fish, potato salad, boiled vegetables, and pickles. They drink Japanese tea with cups. All dishes are on a tray and the carers prepare a tray for everyone.

After lunch they say "Itadakimasu"¹⁴ with their hands close together to express of gratitude of the meal then lunch starts. They also do the same before lunch but saying "Gochisosamadeshita".

She enjoyed lunch with others. After they all finished lunch, some will wash the Japanese tea cups as their role. Mrs Y gathers cups at her table and gives them to the person to wash them. She goes back to her room and takes her medicine. She then takes a nap for half an hour.

After napping for half hour Mrs Y wakes up refreshed and looks for her slippers; she puts them on and goes down to the first floor. The physical therapist waits for her to help her with the training activities of daily life. In the training session, she uses a ball to train the joint range of motion with the therapist¹⁵. Afterwards she trains to raise herself up from the chair with the therapist¹⁶.

After her nice exercise, it is time for some green tea¹. She washes her hand with soap and dries her hands with a towel. She likes to have her tea with some soft azuki-bean jelly¹⁷ brought by her son in his last visit. Soft azuki-bean jelly needs to be cut because

- 10. Japanese traditional ballad called as Enka
- 11. Japanese Channel for education and news
- 12. Japanese wet towel



13. Typical lunch in Japan.



14. "Itadakimasu" and "Gochisosamadesita" posture



15. Training with the therapist using a ball



16. Training to stand up



it is one block⁴. She prepares a small plate and a pick then uses a small plastic spatula and cuts two pieces of jelly. Then she takes care not to pour hot tea over her hands by mistake.

Later she joins cognitive activities (reading newspaper) with others in the lounge. The carer reads the newspaper of the day and introduces some events then asks the elderly how about the case in their early days. Mrs Y reminds the related events and tells all about her experience. Others also share their memories.

After reading the newspaper, a monk comes to the care house and gives a talk to all. After the talk, the carer distributes small sutra books¹⁸ and they chant a Buddhist sutra together.

After finished chanting, they closed their eyes with their hands closed then bow their head.

It is late afternoon now and the carer tells Mrs Y that her son and his family are due to arrive at the care house to visit her. She goes to the entrance with the carer and welcomes them. He thanks the carer and says "Mother¹⁹, how are you?" She smiles and replies "I'm fine, thank you everybody for coming all the way²⁰". They take off their shoes at the entrance²¹, leave them in the shoe box and put the slippers for the guests.

They go to the conversation lounge and the carer tells them s/he will come back again after one hour and leaves the lounge. Mrs Y and her son's family sit on the sofa close together. They brought some of Mrs Y's favourite sweets and tea to her. They start talking about the family's day. She asks the grandchildren about their school days. His wife asks about what she did since they last visited. His children show her some of the latest photos on the smartphone. He brings her glasses. They talk, and laugh. Then they take a selfie together.

Before they leave his wife helps Mrs Y to put her coat on because she will go to the entrance to see them off. He tells her, that keeping exercising is good for her.

She asks him when he will visit her again and he reminds her that next week is Hinamatsuri²² so he will be coming the day before Hinamatsuri to take her so that she can celebrate it with the family.

On Sunday the care center has Setsubun festival that celebrates the coming of spring²³.

17. Azuki-bean jelly with a pickand japanese tea



18. Sutra book



- 19. Japanese call family member by a role, not name
- 20. Greetings
- 21. Entering the house
- 22. Japanese festival for girls on 3rd March. At least on of his children should be a girl in this scenario.
- 23. Setsubun is 3rd Feb and means to divide seasons (winter <-> spring).

They need to prepare roasted soybeans because they do Mamemaki that is scattering the beans to drive the demons away. At dinner of Setsubun, they eat rolled sushi called Ehomaki²⁴ that means roll of blessed direction. It is dangerous to eat it without cutting it; they eat pieces of it orienting to the blessed direction.

Mrs Y and the other residents helped to open the bag of roasted soybeans and put some into plates to distribute to everyone. The carer puts a mask of Oni (devil)²⁵ to play the role of devil. They all go out of the center and go to the garden, they throw the beans at the carer with the mask, saying "Oni ha soto, Fuku ha uchi"²⁶.

After all the scattering of the beans, they get into the center, wash their hands, and prepare the dinner of Ehomaki. They eat a piece of Ehomaki orienting the blessed direction. When they eat Ehomaki, they make a wish in their mind. Then enjoy the dinner.

24. Soy beans and Ehomaki. Japanese usually eat Ehomaki without cutting, orienting their face to the blessed direction that is different from every last year.


3.1 Mrs Yamada – Morning Routine, Breakfast

Scenario name	Mrs Yamada – Morning routine, Breakfast
Time of the day	Morning
General Description	<> Mrs Y has green tea, baked salmon, miso soup, rice, boiled vegetables, and fruits from 7:30 for breakfast ¹ . She doesn't like Natto ² so she doesn't take it always. She always has breakfast in the dining room with other residents and some carers take care of them to prepare the trays of the breakfast and tea. The elderly people like to have their own jobs so some help the carers and some open the curtains. She will also find her tablets and put them on the table in order not to forget to take them when she finishes her breakfast. After eating the breakfast, she has her vital check ³ in lounge. The nurse and the carer check her breathing, blood pressure, body temperature, heart rate, and so on.
Functional areas of the	F1. Dining room
house involved	F2. Lounge
Relevant objects involved	 O1. Plates/glasses O2. Pot for tea O3. Cutlery O4. Table O5. Chair
Relevant persons	B1. Other elderly
(in addition to user and caregiver)	B2. Carer
What a human (formal or	H1. Say Good morning
informal) caregiver shall /	H2. Remind her of the time for breakfast
can do in this scenario	H3. Tell the today's breakfast menu
	H4. Serve breakfast
	H5. Ask whether she would like to have more tea
	H6. Bring a teapot
	H7. Remind her about her medication
	H8. Remind her about the vital check

Cultural knowledge involved (top level	C1.	Japanese breakfast dishes	
concepts in the Cultural Knowledge bierarchy)			
Which "qualitative"	D1	lananese breakfast and what it could entail	
caregiver behavior is	D1.	Awareness of Mrs Y's preferences (not having Natto etc)	
expected to be culturally	D3.	Polite and respectful way of addressing Mrs Y. 'Please' and '	Thank you' prefix most dialogue.
dependent		, , ,	, , , , , , , , , , , , , , , , , , , ,
Which behavior is	E1.	Gentle volume of voice	
"quantitatively" different	E2.	Moving about at slow speed	
depending on culture			
(volume and tone of voice,			
distance, velocity, etc.)			
Left: What the robot shall /	A1.	Greet Mrs Y, saying "Good morning" and asking her how	A4'. Lead Mrs Y to the dining room by
can do in this scenario		she is feeling today (M5,M6,M7,P1,P2,P3,P4,V2,V4,V5) [E]	walking ahead of her. (Assuming that
Right: Alternative tasks	A2.	Remind Mrs Y the time of breakfast (P6,V6,V7) [E]	the whole path is traversable for the
	A3.	Tell Mrs Y the today's breakfast menu, and praise on	robot).
		eating a healthy and balanced diet (M7,P6,V6,V7) [E]	A7'+A8'. Tell Mrs Y the positions of
	A4.	Move to the dining room with Mrs Y (M4,M6,P2,P4) [H]	needed objects in the environment,
	A5.	Greet all other elderly (M7,P3,V5) [E]	knowing them a priori, or detecting
	A6.	Ask Mrs Y if she needs help in preparing her tray (P2,V1)	them by using markers.
	Δ7	Locate objects as needed (plates glasses nots)	needed for preparing the tray
		(M3 M6 P4 P5) [H]	knowing their position in the
	48	Bring objects as needed (plates glasses nots)	environment or using markers
	7.0.	(M1 M2 M3 M5 M6 P4 P5) [H]	A8''+A9. Permanently attach a tray to
	A9.	Prepare a tray with food (M1.M3.P5.P6) [H]	the robot's chest to bring objects
	A10.	Keep company to Mrs Y while eating (P2,V1,V2,V4) [E]	A11'. Provide general comments
	A11.	Ask Mrs Y if she enjoyed her breakfast and comment on	about breakfast
		her dietary choices (M7,P2,V1,V4) [H]	A13'. Suggest Mrs Y to go to the
	A12.	Remind Mrs Y about medication and vital check (P6,V3,V6)	lounge for vital check.
		[E]	A13". Lead Mrs Y to the lounge by
	A13.	Move with Mrs Y to the lounge for vital check (M4,M6,P4)	walking ahead of her. (Assuming that
		[H]	the whole path is traversable for the
			robot).

Left: Robot motor	M1. Grasp objects (A8,A9)	- no dedicated module, it could be
capabilities required		achieved with external libraries
Right: Corresponding	M2. Carry lightweight items (A8,A9)	- feasible if payload is <300 g
Pepper API (if any)	M3. Navigate autonomously in the house (A7,A8)	- ALNavigation
	M4. Follow moving objects / persons (A4,A13)	- ALVisionRecognition,
		ALCloseObjectDetection,
		ALNavigation
	M5. Reach a target / person (A1,A8)	- ALVisionRecognition,
		ALCloseObjectDetection,
		ALNavigation
	M6. Avoid unexpected static or moving obstacles / persons	- ALMotion
	(A1,A4,A7,A8,A13)	
	M7. Show feelings (A1,A3,A5,A11)	- ALLeds, ALRobotPosture,
		ALAnimationPlayer
Left: Robot perceptual	P1. Locate persons (distance and position) (A1)	- ALPeoplePerception
capabilities required	P2. Recognize actions (A1,A4,A6,A10,A11)	- no dedicated module, it could be
Right: Corresponding		achieved with external libraries
Pepper API (if any)	P3. Recognize persons / faces (A1,A5)	- ALFaceDetection
	P4. Recognize obstacles / uneven ground (A1,A4,A7,A8,A13)	- ALLaser, ALSonar
	P5. Recognize/ Locate items (A7,A8,A9)	- ALVisionRecognition
	P6. Retrieve / store information (A2,A3,A9,A12)	- ALMemory
Left: Robot verbal	V1. Ask Yes/ No questions (A6,A10,A11)	- ALDialog, ALSpeechRecognition,
capabilities involved		ALTextToSpeech, ALTabletService
Right: Corresponding	V2. Ask multiple choice questions (A1,A10)	- ALDialog, ALSpeechRecognition,
Pepper API (if any)		ALTextToSpeech, ALTabletService
	V3. Suggest / remind (A12)	- ALDialog, ALTextToSpeech,
		ALTabletService
	V4. Context dependent chat (A1,A10,A11)	- ALDialog, ALSpeechRecognition,
		ALTextToSpeech, ALTabletService
	V5. Greet <mark>(A1,A5)</mark>	- ALDialog, ALTextToSpeech
	V6. Encourage/ praise (A2,A3,A12)	- ALDialog, ALTextToSpeech,
		ALTabletService
	V7. Report information (A2,A3)	- ALMemory, ALTextToSpeech,
		ALTabletService
Which "qualitative" robot	R1. Showing awareness of Mrs Y's preferences	

behavior is expected to be	R2.	Showing awareness of Japanese breakfast and what it could entail
culturally dependent		
Which behavior is	T1.	Speaks with soft tone
"quantitatively" different	T2.	Speaks in low volume
depending con culture	Т3.	Walks in low speed
(volume and tone of voice,		
distance, velocity, etc)		

3.2 Mrs Yamada – Morning Routine, Dressing

Scenario name	Mrs Yamada – Morning routine, Dressing		
Time of the day	Morning		
General Description	 <> Mrs Y had many Kimono¹ for several years ago but she has no more chances to put them on, so she chose good ones and gave them to her son's wife. She reworked some scarfs, drawstring bags with rest of them. After moving to a care house, she puts easy-to-wear² but sometimes adds such scarfs to enjoy dressing. She wears a blouse and a long skirt then chooses one scarf made of Kimono cloth. She combs her hair nicely. 		
Functional areas of the	F1. Bedroom - Bed		
house involved	F2. Bedroom – Wardrobe		
Relevant objects involved	O1. blouse, skirt O2. Scarf O3. Comb		
Relevant persons (in addition to user and caregiver)	B1. No-one		
What a human (formal or	H1. Help Mrs Y to wear her blouse, if she needs help		
informal) caregiver shall /	H2. Help Mrs Y to choose scarf		
can do in this scenario	H3. Bring comb		
Cultural knowledge involved (top level concepts in the Cultural Knowledge hierarchy)	C1. Japanese way to rework dressing		
Which "qualitative"	D1. The way of praising depends on culture and current emotion		
caregiver behaviour is	D2. Remember her favourite scarf		
expected to be culturally	D3. Not rushing Mrs C		
dependent			
Which behaviour is	E1. Polite and soft tone of voice		
"quantitatively" different	E2. Gentle reminder about the hairdresser		

depending on culture	E3.	Distance kept by caregiver from Mrs Y is a parameter that	depends on culture
(volume and tone of voice,			
distance, velocity, etc.)			
Left: What the robot shall /	A1.	Locate objects if needed (clothes, scarf, comb)	A1'+A2'. Tell Mrs Y the positions of
can do in this scenario		(M4,M7,P5,P6) [H]	needed objects in the environment,
Right: Alternative tasks	A2.	Bring objects if needed (clothes, scarf, comb)	knowing them a priori, or detecting
		(M2,M3,M4,M5,M7,P1,P5) [H]	them by using markers.
	A3.	Recommend wearing a scarf (P7,V2,V3,V4) [E]	A2". Permanently attach a tray to the
	A4.	Open wardrobe with clothes	robot's chest to bring objects
		(M1,M2,M5,M6,M7,M8,P5,P6) [H]	A4'. Open the wardrobe, by controlling
	A5.	Ask Mrs Y if she needs help while getting dressed (P4,V1)	its automatic sliding doors within the
	16	[C] Usin Mrs V to wear clothes by helding them	Sindit nome
	A0.		Ao. Bring a hanger (on wheels) close to
	^7	$(V11, V12, V13, V13, V17, P1, P2, P4, P3, P0)$ [Π]	again
	A7.	Fronce privacy to wirs f ($W4,P4,P5$) [E] Encourage Mrs V to comb har hair ($M0, D2, D7, V2, V4$) [E]	again.
	A0.	Proise Mrs V for hor look (M0 D2 V2 V4) [E]	
Loft: Dobot motor	A9.	Coordinately mayo have (M19, P3, V3, V4) [E]	AlMation
canabilities required		Coordinately move base/ arms/ namus (A4,A0)	- ALIVIOLION
Capabilities required	IVIZ.	Grasp objects (AZ,A4,A0)	- no dedicated module, it could be
Right: Corresponding	N42	Carry lightweight itoms (A2 A6)	fossible if psyload is <200 g
Pepper API (II ally)	IVI5.	Navigate autonomouch in the house (A1 A2 A7)	- Teasible II payload is <500 g
		Reach a target (percen (A2 A4 A6)	- Not reasible
	MG	Rull objects (A4)	no dodicated module, it could be
	1010.	rui objects (A4)	achieved with external libraries
	М7	Avoid unexpected static or moving obstacles / persons	- Al Motion
	1417.	(A1,A2,A4,A6)	
	M8.	Open doors / windows (by communicating with smart	- It could be achieved with a specific
		environment) (A4)	communication protocol
	M9.	Show feelings (A8,A9)	- ALLeds, ALRobotPosture,
			ALAnimationPlayer
Left: Robot perceptual	P1.	Locate persons (distance and position) (A2,A6)	- ALPeoplePerception
capabilities required	P2.	Recognize posture, gesture, movements (A6)	- no dedicated module, it could be
Right: Corresponding			achieved with external libraries
Pepper API (if any)	P3.	Recognize emotions (A8,A9)	- ALMood

	P4.	Recognize actions (A5,A6,A7)	 no dedicated module, it could be achieved with external libraries
	P5.	Recognize obstacles / uneven ground (A1,A2,A4,A6,A7)	- ALLaser, ALSonar
	P6.	Recognize/ Locate items (A1,A4,A6)	- ALVisionRecognition
	P7.	Retrieve / store information (A3,A8)	- ALMemory
Left: Robot verbal	V1.	Ask Yes/ No questions (A5)	- ALDialog, ALSpeechRecognition,
capabilities involved			ALTextToSpeech, ALTabletService
Right: Corresponding	V2.	Suggest / remind (A3,A8)	- ALDialog, ALSpeechRecognition,
Pepper API (if any)			ALTextToSpeech, ALTabletService
	V3.	Context dependent chat (A3,A9)	- ALDialog, ALSpeechRecognition,
			ALTextToSpeech, ALTabletService
	V4.	Encourage/ praise (A3,A8,A9)	- ALDialog, ALTextToSpeech,
			ALTabletService
Which "qualitative" robot	R1.	Use the right words for praising	
behavior is expected to be	R2.	Not rushing Mrs Y	
culturally dependent			
Which behavior is	T1.	Speaks with soft tone	
"quantitatively" different	T2.	Speaks in low volume	
depending con culture	Т3.	Keeps right distance from Mrs Y	
(volume and tone of voice,	T4.	Frequency of reminders is not too high	
distance, velocity, etc)			

3.3 Mrs Yamada - Pre Lunch Routine, Reading/Audio/Tv/Music

Scenario name	Mrs Yamada - Pre Lunch routine, Reading/audio/Tv/music		
Time of the day	mid-Morning		
General Description	<> it is now mid-morning, and Mrs Y would like to listen to a 1. Japanese traditional ballad called as Enka		
	radio, having Japanese green tea. She boils water then puts some Leaves of tea into a teapet then pours bot water.		
	eaves of tea into a teapor then pours not water.		
	She turns the radio on themistens to her ravourite program. She		
	alderly recents to some news and enjoys some music. The program is for		
	After listening to the radio, she desides to go down the first floor		
	After listening to the radio, she decides to go down the first floor		
	to watch IV. She liked to watch NHK ² . She will watch the news		
	and cooking program for a while. She will then go back to her		
	room and talk with her children on the phone. They have their		
	regular time. She or they will call every day.		
Functional areas of the	F1. Kitchen		
nouse involved	F2. IIVing room		
Delevent chiests involved	F3. Lounge with TV		
Relevant objects involved			
	O2. Radio		
	OS. Phone		
	07 Top bags		
	O?. Tea bags		
	O_{2} Tea cop		
Belevant persons	B1 No-one		
	BI. NO-ONE		
What a human (formal or	H1. Help her switch on the radio or TV and find the correct channel (channel of her choice)		
informal) caregiver shall /	H2. Bring her phone		
can do in this scenario	H3. Reminder her to call or call family member		
	H4. Carry her tea cup in the living room		

CARESSES

Cultural knowledge	C1.	Appreciate the importance of Japanese music and Japanese	TV programmes.	
involved (top level	C2.	C2. Understand the importance of keeping in regular contact with her family.		
concepts in the Cultural				
Knowledge hierarchy)				
Which "qualitative"	D1.	Asking politely if she will need help with any of the activities	(starting the TV or the radio, finding	
caregiver behavior is	the ch	annel)		
expected to be culturally	D2.	Reminding her politely to call her son		
dependent	D3.	Bring items and offering them gently		
	D4.	Privacy when talking with family		
Which behavior is	E1.	Polite and soft tone of voice		
"quantitatively" different	E2.	Move slowly and gently in the house		
depending on culture				
(volume and tone of voice,				
distance, velocity, etc.)				
Left: What the robot shall /	A1.	Ask Mrs Y how she feels and if she wants a cup of tea	A3'. Connect to internet radio and let	
can do in this scenario		(P1,P2,P4,P7,V1,V2) [E]	Mrs C listen to her favorite radio	
Right: Alternative tasks	A2.	Remind Mrs Y that her favourite radio show is on	program via the Pepper's	
		(P7,P8,V3,V7) [E]	loudspeakers.	
	A3.	Switch on/off radio and put the correct channel/volume	A3". Connect to internet radio TV and	
		(M6,M7) [H]	let Mrs C watch her favorite TV	
	A4.	Locate objects as needed (phone, tea cup) (M3,M5,P5,P6)	program via the Pepper's screen.	
		[H]	A4'+A5'. Tell Mrs Y the positions of	
	A5.	Bring objects as needed (phone, tea cup)	needed objects in the environment,	
		(M1,M2,M3,M4,M5,P1,P5) [H]	knowing them a priori, or detecting	
	A6.	Encourage Mrs Y to watch TV with the other elderly	them by using markers.	
		(P3,P7,V3,V4,V5) [E]	A5". Permanently attach a tray to the	
	A7.	When Mrs Y is back, remind her to call her family	robot's chest to bring objects	
		(M8,P3,P7,V3) [E]		
	A8.	Ask Mirs Y if she wants to use skype/facetime or phone		
		(V2,V3) [E]		
	A9.	Place a skype/phone call, saying "please hold on" and then		
		asking IVI'S Y to talk (IVI/,P/,V4,V5,V6) [E]		
	A10.	Provide privacy to Mrs Y while talking with family		
		(NI3,NI5,P3,P5) [E]		

Left: Robot motor	M1.	Grasp objects (A5)	- no dedicated module, it could be
capabilities required			achieved with external libraries
Right: Corresponding	M2.	Carry lightweight items (A5)	- feasible if payload is <300 g
Pepper API (if any)	M3.	Navigate autonomously in the house (A4,A5,A10)	- ALNavigation
	M4.	Reach a target / person (A5)	- ALVisionRecognition,
			ALCloseObjectDetection,
			ALNavigation
	M5.	Avoid unexpected static or moving obstacles / persons (A4,A5,A10)	- ALMotion
	M6.	Turn on radio / TV /cassette player (A3)	- ALAudioPlayer
			For external devices, It could be
			achieved with a specific
			communication protocol
	M7.	Operate appliance (by communicating with smart	- It could be achieved with a specific
		environment) <mark>(A3,A9)</mark>	communication protocol
	M8.	Show feelings (A7)	- ALLeds, ALRobotPosture,
			ALAnimationPlayer
Left: Robot perceptual	P1.	Locate persons (distance and position) (A1,A5)	- ALPeoplePerception
capabilities required	P2.	Recognize emotions (A1)	- ALMood
Right: Corresponding	P3.	Recognize actions (A6,A7,A10)	- no dedicated module, it could be
Pepper API (if any)			achieved with external libraries
	P4.	Recognize persons / faces (A1)	- ALFaceDetection
	P5.	Recognize obstacles / uneven ground (A4,A5,A10)	- ALLaser, ALSonar
	P6.	Recognize/ Locate items (A4)	- ALVisionRecognition
	P7.	Retrieve / store information (A1,A2,A6,A7,A9)	- ALMemory
	P8.	Keep track of time (A2)	- no dedicated module, it could be
			achieved with different solutions
Left: Robot verbal	V1.	Ask Yes/ No questions (A1)	- ALDialog, ALSpeechRecognition,
capabilities involved			ALTextToSpeech, ALTabletService
Right: Corresponding	V2.	Ask multiple choice questions (A1,A8)	- ALDialog, ALSpeechRecognition,
Pepper API (if any)			ALTextToSpeech, ALTabletService
	V3.	Suggest / remind (A2,A6,A7,A8)	- ALDialog, ALTextToSpeech,
			ALTabletService
	V4.	Context dependent chat (A6,A9)	- ALDialog, ALSpeechRecognition,
			ALTextToSpeech, ALTabletService
	V5.	Encourage/ praise (A6,A9)	- ALDialog, ALTextToSpeech,

			ALTabletService
	V6.	Place a phone call (A9)	- ALDialog, ALTabletService, or It could
			be achieved with a specific
			communication protocol
	V7.	Report information (A2)	- ALMemory, ALTextToSpeech,
			ALTabletService
Which "qualitative" robot	R1.	Being polite when reminding to call her son	
behavior is expected to be	R2.	Being polite when Asking politely if she will need help with	any of the activities (starting the TV or
culturally dependent		the radio, finding the channel)	
	R3.	Providing privacy when talking with family	
Which behavior is	T1.	Speaks in low volume	
"quantitatively" different	T2.	Speaks with soft tone	
depending con culture	T3.	Walks in low speed	
(volume and tone of voice,			
distance, velocity, etc)			

3.4 Mrs Yamada - Pre Lunch Routine, pray

Scenario name	Mrs Yamada - Pre Lunch routine, Pray
Time of the day	Pre-lunch time
General Description	 After dressing Mrs Y will change the water of a flower vase and pour the water into a small cup. Then she puts the vase beside the portrait of the deceased and put the cup in front of the portrait on a small table in the corner of her bedroom. The table is covered with a white cloth and on it there is a small shelf¹ with a portrait, the vase, a holder of an incense, a holder of a candle, and a bell. She will lighten an incense and a candle, then ring a bell once. She will spend there a few minutes, sitting on the chair, with her hands close together and closed eyes. She thought of her sister in heaven and talked her about recent life then asked him to watch out for her safety.
Functional areas of the house involved	F1. bedroom
Relevant objects involved	 O1. Small table with a shelf O2. Portrait O3. Vase O4. Small cup O5. Scented sticks O6. Candle O7. Matches O8. Box of incense O9. Box of candles O10. Bell
Relevant persons (in addition to user and caregiver)	B1. No-one
What a human (formal or informal) caregiver shall /	H1. Possibly assist the change the water of a vase and put the cup beside the portrait.H2. Possibly assist to pour water into a small cup and put the cup in front of the portrait.

can do in this scenario	H3.	To lighten the incense and the candle should be done by Mr	s Y herself so it would be nice if the		
		carer brings the boxes of the incense and the candle to her.			
	H4.	Assist with sitting on the chair			
	H5.	Tell the death anniversary of a family member if it is the day			
	H6.	Keeping quiet during prayer			
Cultural knowledge	C1.	Japanese way of praying:			
involved (top level		a) To whom – the deceased	a) To whom – the deceased		
concepts in the Cultural		b) How – the process /behaviour e.g sitting, closing eyes, putting hands together			
Knowledge hierarchy)		c) What – the objects used e.g incense, a cup, flower vase			
	C2.	Maintaining the designated praying area in the room			
Which "qualitative"	D1.	Knowing the time of the day for praying			
caregiver behavior is	D2.	Knowing how long the person normally prays			
expected to be culturally	D3.	Helping person's position during praying			
dependent	D4.	Maintaining Mrs Y 's privacy and silence			
	D5.	Show respect for the customs and process of the prayer			
Which behavior is	E1.	Move gently in the room			
"quantitatively" different	E2.	Speak softly whilst helping with preparation for prayer			
depending on culture	E3.	Keep acceptable distance from Mrs Y			
(volume and tone of voice,	E4.	Polite and soft tone of voice			
distance, velocity, etc.)					
What the robot shall / can	A1.	Locate things as needed (cup, scented stick holder, box of	A1'+A2'. Tell Mrs Y the positions of		
do in this scenario		scented sticks, matches) (M6,M9,P5,P6) [H]	needed objects in the environment,		
	A2.	Bring things as needed (cup, scented stick holder, box of	knowing them a priori, or detecting		
		scented stick, matches) (M2,M3,M6,M8,M9,P1,P5) [H]	them by using markers.		
	A3.	Hold the vase while Mrs Y pour water in it	A2". Permanently attach a tray to the		
		(M1,M2,M4,P1,P2,P6) [H]	robot's chest to bring objects		
	A4.	Locate the portrait and put the cup beside the portrait	A3'+A4'. Suggest Mrs Y to pour water		
		(M1,M2,M3,M6,M8,M9,P5,P6) [H]	in the vase and to place the cup		
	A5.	Show interest in Mrs Y praying custom, by asking her	beside the portrait		
		about her religion, e.g. Names of Gods, why she uses	A8'. Remind Mrs Y to be careful while		
		scented sticks, how long she normally prays for, how many	sitting / standing		
		times a day, etc. (M10,P4,P8,V2,V4) [E]	A8'. Suggest Mrs Y that she can put		
	A6.	Provide privacy, staying silent in the room during the	some objects in the robot hands or in		
		prayer (M6,M7,P4) [E]	a tray permamently attached to the		
	A7.	Suggest to pray for blessings for family members and close	robot's chest while she is standing or		

		friends – birthday / wedding anniversaries / death	sitting.
		anniversaries (P8,V3,V5,V6) [E]	
	A8.	Assist Mrs Y to sit on the chair (M5,M8,P1,P2) [H]	
	A9.	Ask Mrs Y if she is comfortable (P2,V1) [E]	
	A10.	Remind Mrs Y to check that there are no flames (P7,V3) [E]	
	A11.	Ask Mrs Y questions about her husband (M10,P3,V1,V2,V4)	
		[E]	
Left: Robot motor	M1.	Coordinately move base/ arms/ hands (A3,A4)	- ALMotion
capabilities required	M2.	Grasp objects (A2,A3,A4)	- no dedicated module, it could be
Right: Corresponding API			achieved with external libraries
or H for "hard"	M3.	Carry lightweight items (A2,A4)	- feasible if payload is <300 g
	M4.	Carry heavyweight items (A3)	- not feasible
	M5.	Support for equilibrium/standing/sitting (A8)	- not feasible
	M6.	Navigate autonomously in the house (A1,A2,A4,A6)	- ALNavigation
	M7.	Track moving objects / persons (A6)	- ALLandmarkDetection,
			ALColorBlobDetection,
			ALVisionRecognition,
			ALCloseObjectDetection
	M8.	Reach a target / person (A2,A4,A8)	- ALVisionRecognition,
			ALCloseObjectDetection,
			ALNavigation
	M9.	Avoid unexpected static or moving obstacles / persons	- ALMotion
	M10	($\Delta 1, \Delta 2, \Delta 4$) Show feelings ($\Delta 5, \Delta 11$)	- Alleds Al Robot Posture
	10110.		Al AnimationPlayer
Left: Robot perceptual	P1	Locate persons (distance and position) ($\Delta 2$, $\Delta 3$, $\Delta 8$)	- Al PeoplePercention
canabilities required	P7	Recognize nosture gesture movements (A3 A8 A9)	- no dedicated module, it could be
Right: corresponding API or	12.		achieved with external libraries
H for "hard"	P3	Recognize emotions (A11)	- Al Mood
	Г.Э. Р/І	Recognize actions (A5 A6)	- no dedicated module, it could be
	. 4.		achieved with external libraries
	P5	Recognize obstacles / uneven ground (A1 A2 A4)	- Allaser AlSonar
	P6	Recognize / Locate items (A1 A3 A4)	- Al VisionBecognition
	P7	Recognize fire / flame (A10)	- not feasible, it could be achieved by
			communicating with the smart
			environment using a specific
			chan on inche d'a specifie

			protocol
	P8.	Retrieve / store information (A5,A7)	- ALMemory
Left: Robot verbal	V1.	Ask Yes / No questions (A9,A11)	- ALDialog, ALSpeechRecognition,
capabilities involved			ALTextToSpeech, ALTabletService
Right: corresponding API or	V2.	Ask multiple choice questions (A5,A11)	- ALDialog, ALSpeechRecognition,
H for "hard"			ALTextToSpeech, ALTabletService
	V3.	Suggest / remind (A7,A10)	- ALDialog, ALTextToSpeech,
			ALTabletService
	V4.	Context dependent chat (A5,A11)	- ALDialog, ALSpeechRecognition,
			ALTextToSpeech, ALTabletService
	V5.	Encourage/ praise (A7)	- ALDialog, ALTextToSpeech,
			ALTabletService
	V6.	Report information (A7)	- ALMemory, ALTextToSpeech,
			ALTabletService
Which "qualitative" robot	R1.	Suggesting when it is the time of the day for praying	
behavior is expected to be	R2.	Waiting for the person to finish praying	
culturally dependent	R3.	Helping person's position during praying	
Which behavior is	T1.	Speaks with soft tone	
"quantitatively" different	T2.	Speaks in low volume	
depending con culture	Т3.	Walks in low speed	
(volume and tone of voice,	T4.	Stands not too close to Mrs Y	
distance, velocity, etc)			

3.5 Mrs Yamada - Lunch Routine, Eating

Scenario name	Mrs Yamada - Lunch routine, Eating	
Time of the day	Lunch time	
General Description	<> Mrs Y eats lunch at a dining room on the first floor with other elderly. They have fixed schedule to have lunch. It is her role to bring wet towels ¹ from a kitchen and put them on the tables for everybody before lunch. Others have other roles such as cleaning the table with a kitchen cloth and open the curtain. Today's lunch ² is rice, miso soup, backed fish, potato salad, boiled vegetables, and pickles. They drink Japanese tea with cups. All dishes are on a tray and the carers put the tray for everyone. After lunch is ready and everyone is seated, they say "Itadakimasu" ³ with their hands close together to express of gratitude for the meal, then the lunch starts. They also do the same after lunch but saying "Gochisosamadeshita". She enjoyed lunch with others. After everyone finished lunch, others will wash Japanese tea cups as their role. Mrs Y gathers cups at her table and gives them to the person. She goes back to her room and takes her medicine. 3. "Itadakimasu" and "Gochisosamades posture	ita″
Functional areas of the	F1. Dining room	
house involved	F2. Kitchen	
	F3. Dining table	
Bolovant objects involved	F4. Own room	
Relevant objects involved	O_1 . We tower O_2 Tray	
	03. Cups	
	O4. Medicine	
	O5. Curtain	

Relevant persons	B1.	Carer		
(in addition to user and	B2.	Other elderly people		
caregiver)				
What a human (formal or	H1.	Assist to go to the dining room		
informal) caregiver shall /	H2.	Assist to prepare wet towels		
can do in this scenario	H3.	Serve the trays on the table		
	H4.	Pour Japanese tea if they need more.		
	H5.	Keep company		
	H7.	Assist gathering cups and washing them		
	H8.	Assist Mrs Y to take her medicine		
	H9.	Open the curtains		
Cultural knowledge	C1.	Japanese way to start and finish lunch		
involved (top level	C2.	Japanese tool of wet towel to eat lunch		
concepts in the Cultural	C3.	Way of eating (together with others)		
Knowledge hierarchy)	C5.	Way of serving (all on the tray)		
	C6.	Fixed menu is served		
Which "qualitative"	D1.	Time of eating		
caregiver behavior is	D2.	Type of food		
expected to be culturally	D3.	Type of tea preparation.		
dependent	D4.	Serve the tray for all and wait for everyone seated.		
	D5.	Pay attention whether anyone need more tea		
	D6.	Check if she takes appropriate medicine or tell her if she for	gets to do	
Which behavior is	E1.	Polite and soft tone of voice		
"quantitatively" different	E2.	Unrushed walking and eating		
depending con culture				
(volume and tone of voice,				
distance, velocity, etc.)				
Left: What the robot shall /	A1.	Remind Mrs Y that it is lunch time (P4,P7,P8,V3) [E]	A4'+A5'. Tell Mrs Y the positions of	
can do in this scenario	A2.	Walk with Mrs Y to the dining room and back to the room	needed objects in the environment,	
Right: Alternative tasks		(M7,M9,P1,P5) [E]	knowing them a priori, or detecting	
	A3.	Greet other elderly (M6,M9,M10,P1,P4,P5,V5) [E]	them by using markers.	
	A4.	Locate objects as needed (towel, tray, cups, medicine)	A6'. Help Mrs Y to prepare a tray with	
		(M6,M9,P5,P6) [H]	food by suggesting the items to be	
	A5.	Bring objects as needed (towel, tray, cups, medicine)	taken and where they should be	
		(M2,M3,M6,M8,M9,P1,P5) H	placed in the tray.	

CARESSES

	A6.	Prepare a tray with food for Mrs Y (M2,M3,P6,P7) [H]	A7'. Suggest Mrs Y to bring the tray
	A7.	Bring the tray to the table (M2,M4,M6,M8,M9,P1,P4,P5)	with food to the table
		(H)	A5"+A7". Permanently attach a tray
	A8.	Praise on eating a healthy and balanced diet (V4,V6) [E]	to the robot's chest to bring objects
	A9.	Perform "Itadakimasu" and "Gochisosamadeshita"	A9'. Perform "Itadakimasu" and
		(M1,M10,P2,P3,V4) [H]	"Gochisosamadeshita" when asked
	A10.	Keep company during lunch (V1,V2,V4) [E]	by Mrs Y.
	A11.	Ask Mrs Y how she feels (P2,V1,V2) [E->H]	A12'. Encourage Mrs Y to stand or sit
	A12.	Support for standing and sitting (M5,M8,P1) [H]	
	A13.	Remind Mrs Y to take her medicine (P7,P8,V3) [E]	
Left: Robot motor	M1.	Coordinately move base/ arms/ hands (A9)	- ALMotion
capabilities required	M2.	Grasp objects (A5,A6,A7)	- no dedicated module, it could be
Right: Corresponding			achieved with external libraries
Pepper API (if any)	M3.	Carry lightweight items (A5,A6)	- feasible if payload is <300 g
	M4.	Carry heavyweight items (A7)	- not feasible
	M5.	Support for equilibrium/standing/sitting (A12)	- not feasible
	M6.	Navigate autonomously in the house (A3,A4,A5,A7)	- ALNavigation
	M7.	Follow moving objects / persons (A2)	- ALVisionRecognition,
			ALCloseObjectDetection,
			ALNavigation
	M8.	Reach a target / person (A5,A7,A12)	- ALVisionRecognition,
			ALCloseObjectDetection,
			ALNavigation
	M9.	Avoid unexpected static or moving obstacles / persons	- ALMotion
		(A2,A3,A4,A5,A7)	
	M10.	Show feelings (A3,A9)	- ALLeds, ALRobotPosture,
			ALAnimationPlayer
Left: Robot perceptual	Ρ1.	Locate persons (distance and position) (A2,A3,A5,A7,A12)	- ALPeoplePerception
capabilities required	Ρ2.	Recognize posture, gesture, movements (A9,A11)	- no dedicated module, it could be
Right: Corresponding			achieved with external libraries
Pepper API (if any)	P3.	Recognize actions (A9)	- no dedicated module, it could be
			achieved with external libraries
	Ρ4.	Recognize persons / faces (A1,A3,A7)	- ALFaceDetection
	Ρ5.	Recognize obstacles / uneven ground (A2,A3,A4,A5,A7)	- ALLaser, ALSonar
	P6.	Recognize/ Locate items (A4,A6)	- ALVisionRecognition
	Ρ7.	Retrieve / store information (A1,A6,A13)	- ALMemory

	P8.	Keep track of time (A1,A13)	- no dedicated module, it could be achieved with different solutions
Left: Robot verbal	V1.	Ask Yes/ No questions (A10,A11)	- ALDialog, ALSpeechRecognition,
capabilities involved			ALTextToSpeech, ALTabletService
Right: Corresponding	V2.	Ask multiple choice questions (A10,A11)	- ALDialog, ALSpeechRecognition,
Pepper API (if any)			ALTextToSpeech, ALTabletService
	V3.	Suggest / remind (A1,A13)	- Aldialog, ALTextToSpeech,
			ALTabletService
	V4.	Context dependent chat (A8,A9,A10)	- ALDialog, ALSpeechRecognition,
			ALTextToSpeech, ALTabletService
	V5.	Greet (A3)	 ALDialog, ALTextToSpeech
	V6.	Encourage/ praise (A8)	- ALDialog, ALTextToSpeech,
			ALTabletService
Which "qualitative" robot	R1.	Showing awareness of lunch routines (before, during and aft	er lunch)
behavior is expected to be	R2.	Paying attention whether anyone need more tea	
culturally dependent	R3.	Check if Mrs Y takes appropriate medicine or tell her if she for	orgets to do
Which behavior is	T1.	Speaks with soft tone	
"quantitatively" different	T2.	Speaks in low volume	
depending con culture	Т3.	Patiently waits during eating and lunch routines	
(volume and tone of voice,			
distance, velocity, etc)			

3.6 Mrs Yamada - After Lunch Routine, Nap, Recreation and Meditation

Scenario name	Mrs Yamada - After Lunch routine, Nap, recreation and meditation
Time of the day	Early afternoon
General Description	<> after her light lunch Mrs Y goes back to her room and takes a nap for half an hour. She goes to her bed and closes her eyes. She falls asleep. After taking about 30 minutes sleep, she wakes up. Then she joins cognitive activities (reading newspaper) with others in the lounge. The carer reads the newspaper of the day and introduces some events then asks the elderly to recall similar cases in their earlier days. Mrs Y recounts the related events and tells all about her experience. Others also share the memories all together. After reading the newspaper, a monk comes to the care house and he gives a talk to all. After the talk, the carer distributes small sutra books ¹ and they chant a Buddhist sutra together. After finished chanting, they close their eyes and with their hands closed together they bow their head.
Functional areas of the	F1. Bedroom
house involved	F2. Lounge
Relevant objects involved	O1. Bed
	O2. Newspaper
	O3. Sutra book
Relevant persons	B1. Carer
(in addition to user and caregiver)	B2. Monk
What a human (formal or	H1. Don't disturb her nap, but keep track of time
informal) caregiver shall /	H2. If she usually takes a nap for 30 minutes, make sure that she gently wakes up and don't let her stay
can do in this scenario	in the chair for hours
	H3. Choose appropriate news in the newspaper
	H4. Read the news to all
	H5. Suggest to all to introduce own experience
	H6. Encourage everyone to share memories

	H7.	Encourage all to listen to the monk	
	H8.	Distribute the sutra books	
	H9.	Chant together	
	H10.	Collect the books after chant	
Cultural knowledge	C1.	Japanese? Cognitive training to recall memories	
involved (top level	C2.	Japanese way to chant	
concepts in the Cultural			
Knowledge hierarchy)			
Which "qualitative"	D1.	Choose the topics that is appropriate for time and place an	nd people.
caregiver behavior is	D2.	Give all people the chance to talk	
expected to be culturally	D3.	Touching not desirable for non-family members	
dependent			
Which behavior is	E1.	Polite and soft tone, low volume of voice	
"quantitatively" different	E2.	Keep some distance for non-family members	
depending on culture	E3.	Moving about in calm slow manner	
(volume and tone of voice,	E4.	Gestures are gentle and not too exaggerated	
distance, velocity, etc.)	E5.	Personal space - Distance from Mrs Y	
Left: What the robot shall /	A1.	Walk towards Mrs Y (M4,M5,M6,P1,P5,P6) [E]	A8'+A9'. Tell Mrs Y the positions of
can do in this scenario	A2.	Suggest Mrs S to take a nap and ask her if she would like	needed objects in the environment,
Right: Alternative tasks		to be woken up after 30 minutes (P3,V1,V3) [E]	knowing them a priori, or detecting
	A3.	Keep track of time and eventually gently wake up Mrs S	them by using markers.
		(P4,P10,V4,V6) [E]	A9". Permanently attach a tray to the
	A4.	Ask Mrs Y how she feels (P2,P3,V1,V2) [E]	robot's chest to bring objects
	A5.	Choose topics and news appropriate for Mrs Y, by	A11'. Suggest Mrs Y and other elderly to
		providing information using internet (P8,P9) [E]	place the books on a table.
	A6.	Refer to Mrs Y news and next events (V4,V7) [E]	A13'. Provide general comments about
	A7.	Ask Mrs Y about her past (M7,V1,V2,V4,V6) [E]	religion
	A8.	Locate things as needed (newspaper, Sutra book)	
		(M4,M6,P6,P7) [H]	
	A9.	Bring things as needed (newspaper, Sutra book)	
		(M2,M3,M4,M5,M6,P1,P6) [H]	
	A10.	Detect the monk and appropriately greet him	
		(M4,M5,M6,P1,P5,P6,V5) [E]	
	A11.	Collect the books after the chant	
		(M1,M2,M3,M4,M5,M6,P1,P6,P7) [H]	

	A12.	Provide privacy (M4,P4) [E]	
	A13.	Comment on Mrs Y chanting and on her peaceful	
		appearance after praying, asking her how she feels after	
		praying (M7,P3,V2,V4) [H]	
Left: Robot motor	M1.	Coordinately move base/ arms/ hands (A11)	- ALMotion
capabilities required	M2.	Grasp objects (A9,A11)	- no dedicated module, it could be
Right: Corresponding			achieved with external libraries
Pepper API (if any)	M3.	Carry lightweight items (A9,A11)	 feasible if payload is <300 g
	M4.	Navigate autonomously in the house	- ALNavigation
		(A1,A8,A9,A10,A11,A12)	
	M5.	Reach a target / person (A1,A9,A10,A11)	- ALVisionRecognition,
			ALCloseObjectDetection, ALNavigation
	M6.	Avoid unexpected static or moving obstacles / persons	- ALMotion
		(A1,A8,A9,A10,A11)	
	M7.	Show feelings (A7,A13)	- ALLeds, ALRobotPosture,
			ALAnimationPlayer
Left: Robot perceptual	P1.	Locate persons (distance and position) (A1,A9,A10,A11)	- ALPeoplePerception
capabilities required	P2.	Recognize posture, gesture, movements (A4)	- no dedicated module, it could be
Right: Corresponding			achieved with external libraries
Pepper API (if any)	P3.	Recognize emotions (A2,A4,A13)	- ALMood
	P4.	Recognize actions (A3,A12)	- no dedicated module, it could be
			achieved with external libraries
	P5.	Recognize persons / faces (A1,A10)	- ALFaceDetection
	P6.	Recognize obstacles / uneven ground	- ALLaser, ALSonar
		(A1,A8,A9,A10,A11)	
	Ρ7.	Recognize/ Locate items (A8,A11)	- ALVisionRecognition
	P8.	Retrieve / store information (A5)	- ALMemory
	P9.	Use search engines for finding information (A5)	- ALTabletService
	P10.	Keep track of time (A3)	- no dedicated module, it could be
			achieved with different solutions
Left: Robot verbal	V1.	Ask Yes/ No questions (A2,A4,A7)	- ALDialog, ALSpeechRecognition,
capabilities involved			ALTextToSpeech, ALTabletService
Right: Corresponding	V2.	Ask multiple choice questions (A4,A7,A13)	 ALDialog, ALSpeechRecognition,
Pepper API (if any)			ALTextToSpeech, ALTabletService
	V3.	Suggest / remind (A2)	- ALDialog, ALTextToSpeech,

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			ALTabletService
	V4.	Context dependent chat (A3,A6,A7,A13)	- ALDialog, ALSpeechRecognition,
			ALTextToSpeech, ALTabletService
	V5.	Greet (A10)	- ALDialog, ALTextToSpeech
	V6.	Encourage/ praise (A3,A7)	- ALDialog, ALTextToSpeech,
			ALTabletService
	V7.	Report information (A6)	- ALMemory, ALTextToSpeech,
			ALTabletService
Which "qualitative" robot	R1.	Choose the topics that is appropriate for time and place an	nd people
behavior is expected to be	R2.	Invite other people to interact with the robot	
culturally dependent	R2.	Do not touch people	
Which behavior is	T1.	Speaks with soft tone	
"quantitatively" different	T2.	Speaks in low volume	
depending con culture	Т3.	Walks in low speed	
(volume and tone of voice,	T4.	Stands not too close to Mrs Y	
distance, velocity, etc)	T5.	Keeps acceptable distance from the visitor	

3.7 Mrs Yamada - After Lunch Routine, Exercise and Afternoon tea

Scenario name	Mrs Yamada -After Lunch routine, Exercise and afternoon tea			
Time of the day	Early afternoon			
General Description	After napping for half hour Mrs Y wakes up refreshed and looks for her slippers; she puts them on and goes down to the first floor. The physical therapist waits for her to help the training of activities of daily life. In the training session, helped by the therapist, she uses a ball to train the joints' range of motion. ¹ She then trains more, by raising herself up from the chair with the help of the therapist. ² After her nice exercise, it is time for some green tea ¹ . She washes her hands with soap and dries her hands with a towel. She likes to have her tea with some soft azuki-bean jelly ³ brought by her son in his last visit. Soft azuki-bean jelly needs to be cut because it is one block ⁴ . She prepares a small plate and a pick, then uses a small plastic spatula and cuts two pieces of jelly. Then she takes care not to pour hot tea over her hands by mistake.	1. Training with the therapist using a ball. 1. Training with the therapist using a ball. 1. Training to stand up 2. Training to stand up 3. azuki-bean jelly with a pick and Japanese tea Image: A a block of soft azuki-bean jelly		
Functional areas of the	F1. Bedroom			
house involved	F2. Training room			
	F3. Kitchen			
	F4. Living room			

Relevant objects involved	O1. Bed
	O2. Slippers
	O3. Ball
	O4. Towel
	O5. Small plate
	O6. Pick
	O7. Plastic spatula
	O8. Soft azuki-bean jelly
	O9. Teapot
	O10. Cups
	O11. Tea
	O12. Soft azuki-bean jelly
Relevant persons	B1. Therapist
(in addition to user and	
caregiver)	
What a human (formal or	H1. Help her put the slippers on/OFF
informal) caregiver shall /	H2. Information about today's training
can do in this scenario	H3. Encourage her to train
	H4. Pass the ball to use in the training
	H5. Accompany her to do the training
	H6. Give a towel to her
	H7. Bring the small plate, a pick to eat the jelly, a cup, tea pot, tea, a block of jelly with a spatula
	H8. Assist with making the tea
	H9. Keep company during drinking tea, by asking if she liked the training session, what she thinks of the
	azuki bean jelly,
Cultural knowledge	C1. Japanese way of making tea
involved (top level	C2. Japanese sweets
concepts in the Cultural	C3. Japanese tools to eat soft azuki-beans jelly
Knowledge hierarchy)	C4. Japanese way to eat soft azuki-beans jelly
Which "qualitative"	D1. Able to prepare Japanese tea
caregiver behavior is	D2. Motivating exercising as part of living a healthy life
expected to be culturally	D3. Being compassionate to Mrs Y during the training
dependent	D4. Allow Mrs Y to hold her arm for her safety
	D5. Know when to be close and when to keep your distance
	D6. Talk to Mrs Y whilst drinking her tea

	D7.	Ask Mrs Y if she enjoyed her training session	
	D8.	Ask her if the azuki bean jelly was nice and fresh	
	D9.	Touching not desirable for non-family members	
Which behavior is	E1.	Polite and soft tone, low volume of voice	
"quantitatively" different	E2.	Keep some distance for non-family members	
depending on culture	E3.	Moving about in calm slow manner	
(volume and tone of voice,	E4.	Gestures are gentle and not too exaggerated	
distance, velocity, etc.)			
Left: What the robot shall /	A1.	Locate things as needed (slippers, ball, towel, tea, azuki-	A1'+A2'. Tell Mrs Y the positions of
can do in this scenario		bean jelly, plate, pick, spatula) (M5,M8,P5,P6) [H]	needed objects in the environment,
Right: Alternative tasks	A2.	Bring things as needed (slippers, ball, towel, tea, azuki-	knowing them a priori, or detecting
		bean jelly, plate, pick, spatula) (M2,M3,M5,M7,M8,P1,P5)	them by using markers.
		(H)	A2". Permanently attach a tray to
	A3.	Provide information about today's training (P2,P4,P8,V5)	the robot's chest to bring objects
		(E)	A5'. Lead Mrs Y to the training room
	A4.	Remind Mrs Y to train (V2,V4) [E]	by walking ahead of her. (Assuming
	A5.	Accompany Mrs Y to the physical therapist (M6,M8,P5) [H]	that the whole path is traversable
	A6.	Greet the physical therapist (M1,P4,V3) [E]	for the robot).
	A7.	Encourage Mrs Y during training (P3,V4) [H/E]	A7'. Provide general comments
	A8.	Suggest having green tea with jelly. (P9,V1,V2) [E]	about training
	A9.	Remind Mrs Y to be careful while pouring hot water and to	A9'. Remind Mrs Y to switch off the
		switch off the heat (P3,P7,V2) [H]	heat after the tea (or switch off the
	A10.	Hold the plate while Mrs Y prepare it (M2,M4,P6) [H]	heat by communicating with the
			smart environment).
			A10'. Hold the plate in place on the
			table, while Mrs Y prepares it.
Left: Robot motor	M1.	Coordinately move torso/ arms/ hands (A6)	- ALMotion
capabilities required	M2.	Grasp objects (A2,A10)	- no dedicated module, it could be
Right: Corresponding			achieved with external libraries
Pepper API (if any)	M3.	Carry lightweight items (A2)	 feasible if payload is <300 g
	M4.	Carry heavyweight items (A10)	- not feasible
	M5.	Navigate autonomously in the house (A1,A2)	- ALNavigation
	M6.	Follow moving objects / persons (A5)	- ALVisionRecognition,
			ALCloseObjectDetection, ALNavigation
	M7.	Reach a target / person (A2)	- ALVisionRecognition,

			ALCloseObjectDetection, ALNavigation
	M8.	Avoid unexpected static or moving obstacles / persons	- ALMotion
		(A1,A2,A5)	
Left: Robot perceptual	P1.	Locate persons (distance and position) (A2)	- ALPeoplePerception
capabilities required	P2.	Recognize posture, gesture, movements (A3)	- no dedicated module, it could be
Right: Corresponding			achieved with external libraries
Pepper API (if any)	P3.	Recognize actions (A7,A9)	- no dedicated module, it could be
			achieved with external libraries
	P4.	Recognize persons / faces (A3,A6)	- ALFaceDetection
	P5.	Recognize obstacles / uneven ground (A1,A2,A5)	- ALLaser, ALSonar
	P6.	Recognize/ Locate items (A1,A10)	- ALVisionRecognition
	P7.	Recognize fire / flame (A9)	- no dedicated module, it could be
			achieved by communicating with the
			smart environment
	P8.	Retrieve / store information (A3)	- ALMemory
	P9.	Keep track of time (A8)	- no dedicated module, it could be
			achieved with different solutions
Left: Robot verbal	V1.	Ask multiple choice questions (A8)	- ALDialog, ALSpeechRecognition,
capabilities involved			ALTextToSpeech, ALTabletService
Right: Corresponding	V2.	Suggest / remind (A4, A8,A9)	- ALDialog, ALSpeechRecognition,
Pepper API (if any)			ALTextToSpeech, ALTabletService
	V3.	Greet (A6)	 ALDialog, ALTextToSpeech
	V4.	Encourage/ praise (A4,A7)	 ALDialog, ALTextToSpeech,
			ALTabletService
	V5.	Report information (A3)	- ALMemory, ALTextToSpeech,
			ALTabletService
Which "qualitative" robot	R1.	Motivating exercising as part of living a healthy life	
behavior is expected to be	R2.	Being compassionate to Mrs Y during the training	
culturally dependent	R3.	Showing interest in Mrs Y training session	
	R4.	Showing interest in the azuki bean jelly	
Which behavior is	T1.	Speaks with soft tone	
"quantitatively" different	T2.	Speaks in low volume	
depending con culture	T3.	Walks in low speed	
(volume and tone of voice,	T4.	Keeps acceptable distance from Mrs C, unless needed	
distance, velocity, etc)	T5.	Not too many gestures	

3.8 Mrs Yamada - After Lunch Routine, Social Activities (drinking tea, visitors, talking)

Scenario name	Mrs Yamada - After lunch routine, Social activities (drinking tea, visitors, talking)			
Time of the day	Afternoon			
General Description	 <>Today Mrs Y woke up with a little bit of cold. She calls her carer to help to ask her doctor to give her medicine¹. Mrs Y asks her carer to close the door of her room to get dressed. After she dressed, the carer opened the door and told her that her friend Aya has come to visit. Mrs Y has hobbies such as doing Origami and fancywork. Although it gets difficult for her to do dexterous manipulation, they enjoy looking at her previous works and sometimes Aya asks Mrs Y to teach how to do it. Today Mrs Y teaches Aya how to make decorative banner because Aya's grandchild wanted to have it very much. Aya brings her Origami and Mrs Y also has a nice designed Origami so they share pieces of Origami to make the banner. Aya brings some sweets to enjoy them with Mrs Y. Mrs Y thanks her and makes Japanese Gyokuro tea. She boils water and pours hot water into an empty pot; then pours the hot water out of the pot and waits for two minutes.³ They enjoy tea and sweets and make a piece of decorative banner together. 			
Functional areas of the	F1. Living room			
house involved	F2. Kitchen			
Relevant objects involved	 O1. Door O2. Origami O3. Gyokuro tea O4. Pot O5. Cups 			
	O6. Sweets			

Relevant persons	B1.	Carer		
(in addition to user and	B2.	Friend		
caregiver)				
What a human (formal or	H1.	Open the door for visitor and greet appropriately		
informal) caregiver shall /	H2.	Welcome the visitor		
can do in this scenario	H3.	(Friend) Respect her skills of Origami		
	H4.	(Friend) Help to take Origami from the shelf?		
	H5.	(Friend) Thank Mrs Y for giving special tea		
	H6.	(Friend) Help make the tea		
	H7.	(Friend) Help in the kitchen by getting the cups, plates, sw	eets	
Cultural knowledge	C1.	Japanese way of making Gyokuro		
involved (top level	C2.	Japanese sweets		
concepts in the Cultural	C3.	Appropriate for friends and relatives to stop by without ca	lling in advance	
Knowledge hierarchy)	C4.	Expected to invite friends in the house and be hospitable (offer tea) depending on the time of the	
		day		
	C5.	Bring a gift to express the gratitude to informal teacher		
Which "qualitative"	D1.	Proper way of greeting and hospitality		
caregiver behavior is	D2.	Properly addressing the visitor		
expected to be culturally	D3.	Distance from visitor and non-involvement in discussion	Distance from visitor and non-involvement in discussion	
dependent	D4.	Helping in the kitchen, knowing where things are kept if th	ne visitor is close enough to Mrs Y	
	D5.	Washes the cups and dishes		
	D6.	Touching not desirable for non-family members		
Which behavior is	E1.	Polite and soft tone of voice		
"quantitatively" different	E2.	Keep some distance for non-family members	Keep some distance for non-family members	
depending con culture	E3.	Move gently and with low velocity		
(volume and tone of voice,	E4.	Smile		
distance, velocity, etc.)				
Left: What the robot shall /	A1.	Ask Mrs Y how she is feeling and if she needs to call the	A2'. Suggest Mrs Y to call the doctor	
can do in this scenario		doctor (P2,P4,V1,V2) [E]	A4'. Open/close door by connecting to	
Right: Alternative tasks	A2.	Place a skype/phone call to the doctor, saying "please	the smart environment.	
		hold on" and then asking Mrs Y to talk (P7,V5,V7) [E]	A7'. Show the visitor where to hang	
	A3.	Ask Mrs Y information about medicine and doctor's	coat	
		advices and store them (V2,V3,P7) [E]	A10'+A11'. Tell Mrs Y the positions of	
	A4.	Open/close room doors for Mrs Y / visitor (M6,M8,P6)	needed objects in the environment,	
		[H]	knowing them a priori, or detecting	

	A5.	Greet appropriately the visitor (M5.M6.M7.P1.P4.P5.V4)	them by using markers.
	-	[E]	A12'. Locate and indicate objects
	A6.	Welcome the visitor (M9.V3) [E]	needed for preparing the tray, knowing
	A7.	Take and hang visitor's coat (M1.M2.M3.M6.P1.P6) [H]	their position in the environment, or
	A8.	Tell Mrs Y that her friend just came to visit her	using markers. Then suggest Mrs Y to
	,	(M5.M6.M7.P1.P5.V6) [F]	bring the tray with food to the table
	A9.	Provide privacy to Mrs Y and friend (M5.P3) [F]	A11"+A12". Permanently attach a trav
	A10.	Locate things as needed (Origami, tea, pot, cups, sweets)	to the robot's chest to bring objects
		(M5,M7,P5,P6) [H]	A14'. Provide general comments about
	A11.	Bring things as needed (Origami, tea, pot, cups, sweets)	Origami.
		(M2,M3,M5,M6,M7,P1,P5) [H]	
	A12.	Prepare and bring a tray with tea and sweets	
		(M1,M2,M4,M5,M6,M7,P1,P5,P6) [H]	
	A13.	Show interest and ask questions on Mrs Y Origami work	
		(M9,P7,P8,V1,V2,V3) [E]	
	A14.	Congratulate with Mrs Y for her Origami skills (V3,V5) [H]	
Left: Robot motor	M1.	Coordinately move base/ arms/ hands (A7,A12)	- ALMotion
capabilities required	M2.	Grasp objects (A7,A11,A12)	- no dedicated module, it could be
Right: Corresponding			achieved with external libraries
Pepper API (if any)	M3.	Carry lightweight items (A7,A11)	- feasible if payload is <300 g
	M4.	Carry heavyweight items (A12)	- not feasible
	M5.	Navigate autonomously in the house	- ALNavigation
		(A5,A8,A9,A10,A11,A12)	
	M6.	Reach a target / person (A4,A5,A7,A8,A11,A12)	- ALVisionRecognition,
			ALCloseObjectDetection, ALNavigation
	M7.	Avoid unexpected static or moving obstacles / persons	- ALMotion
		(A5,A8,A10,A11,A12)	
	M8.	Open doors / windows (by communicating with smart	- It could be achieved with a specific
		environment) (A4)	communication protocol
	M9.	Show feelings (A6,A13)	- ALLeds, ALRobotPosture,
			ALAnimationPlayer
Left: Robot perceptual	P1.	Locate persons (distance and position)	- ALPeoplePerception
capabilities required		(A5,A7,A8,A11,A12)	
Right: Corresponding	P2.	Recognize emotions (A1)	- ALMOOD
Pepper API (if any)	P3.	Recognize actions (A9)	- no dedicated module, it could be
			achieved with external libraries

	P4.	Recognize persons / faces (A1,A5)	- ALFaceDetection
	P5.	Recognize obstacles / uneven ground	- ALLaser, ALSonar
		(A5,A8,A10,A11,A12)	
	P6.	Recognize/ Locate items (A4,A7,A10,A12)	- ALVisionRecognition
	P7.	Retrieve / store information (A2,A3,A13)	- ALMemory
	P8.	Recognize dialogue context (A13)	- ALSpeechRecognition
Left: Robot verbal	V1.	Ask Yes/ No questions (A1,A13)	- ALDialog, ALSpeechRecognition,
capabilities involved			ALTextToSpeech, ALTabletService
Right: Corresponding	V2.	Ask multiple choice questions (A1,A3,A13)	- ALDialog, ALSpeechRecognition,
Pepper API (if any)			ALTextToSpeech, ALTabletService
	V3.	Context dependent chat (A3,A6,A13,A14)	- ALDialog, ALSpeechRecognition,
			ALTextToSpeech, ALTabletService
	V4.	Greet (A5)	- ALDialog, ALTextToSpeech
	V5.	Encourage/ praise (A2,A14)	- ALDialog, ALTextToSpeech,
			ALTabletService
	V6.	Report information (A8)	- ALMemory, ALTextToSpeech,
			ALTabletService
	V7.	Place a phone call (A2)	- ALTabletService, or a specific
			communication protocol
Which "qualitative" robot	R1.	Proper way of greeting and hospitality	
behavior is expected to be	R2.	Respecting the relationship between Mrs Y and visitor	
culturally dependent	R3.	Non-involvement in discussion with the visitor	
	R4.	Being ready to help during tea preparation	
Which behavior is	T1.	Speaks with soft tone	
"quantitatively" different	T2.	Speaks in low volume	
depending con culture	T3.	Stands not too close to Mrs Y	
(volume and tone of voice,	T4.	Keeps acceptable distance from the visitor	
distance, velocity, etc)	T5.	Walks in low speed	

3.9 Mrs Yamada - After Lunch Routine, Son's family, social activity

Scenario name	Mrs Yamada - After Lunch routine, Son's family, social activity								
Time of the day	Late afternoon								
General Description	<> It is late afternoon now and the carer reminds Mrs Y that her son and his family will be arriving soon at the care house to visit	 Japanese call family member by a role, not name 							
	her. She goes to the entrance with the carer and welcomes all there. He thanks the carer then and says "Mother ¹ , how are you?".	2. Greetings							
	She smiles and replies "I'm fine, thank you everybody for coming	3. Entering the house							
	all the way". They take off their shoes at the entrance ³ , leave them	1 Jananese festival for airls on 3rd March							
	in the shoe box and put the guests' slippers on .	One of his children is a girl.							
	They go to the lounge and the carer tells them he/she will leave								
	the sofa close together. They bring Mrs V's some of her favourite								
	sweets and tea. They start talking about her son's family's day. She								
	asks grandchildren about school days. His wife asks Mrs Y about								
	what she did since they last visited. His children show her some of								
	the latest photos on the smartphone. He brings her glasses. They talk, and laugh. Then they take a selfie together.								
	Before they leave his wife helps her put her coat because she will								
	go to the entrance to see them off. He tells her, that keeping exercising is good for her								
	exercising is good for her.								
	She asks him when he will visit her again and he reminds her that next week is Hinamatsuri ⁴ so he will be coming the day before Hinamatsuri to take her so that she can celebrate it with the								
	family								
	They have to go now and they say goodbye								
Functional areas of the	F1. Entrance of the care house								
house involved	F2. Conversation Lounge								
Relevant objects involved	O1. Slippers for the guests								
	O2. Shoe box								
	O3. Sofa								
	O4. Sweets and tea								
	O5. Reading glasses								

	06.	Coat	
	07.	Coat stand	
	08.	Smartphone	
Relevant persons	B1.	The carer	
(in addition to user and	B2.	Son and his family(informal carer)	
caregiver)			
What a human (formal or	H1.	Prepare the slippers for son's family	
informal) caregiver shall /	H2.	Encourage her to go for walk	
can do in this scenario	H3.	Help her put on her coat	
	H4.	Provide some privacy to mother and son and his family	
	H5.	Ask whether the son and his family would like something to eat or drink	
	H6.	Stay back at the house	
	H7.	Switch on and off lights of the lounge as needed	
	H8.	Put the slippers back to the place where they were	
	H9.	Show interest in Hinamatsuri	
Cultural knowledge	C1.	Greeting customs	
involved (top level	C2.	Level of communication and detail of exchange of information	
concepts in the Cultural	C3.	Son /parent relationship in Japanese culture	
Knowledge hierarchy)	C4.	Use of words in Japan	
	C5.	Expectation that families celebrate festivals together	
	C6.	Japanese festival and preparation	
Which "qualitative"	D1.	Way of greeting with non-family members	
caregiver behavior is	D2.	involvement in discussion by non-family	
expected to be culturally	D3.	Mother –son way of greeting, talking	
dependent	D4.	Expression of compassion between mother-son	
	D5.	Sharing details of everyday life	
	D6.	Expressing interest in Hinamatsuri	
	D7.	Communicating using indirect questions	
	D8.	Touching not desirable for non-family members	
Which behavior is	E1.	Polite and soft tone, low volume of voice	
"quantitatively" different	E2.	Keep some distance for non-family members	
depending on culture	E3.	Moving about in calm slow manner	
(volume and tone of voice,	E4.	Gestures are gentle and not too exaggerated	
distance, velocity, etc.)			
Left: What the robot shall /	A1.	Move to the entrance with Mrs Y (M8,M10,M11,P1,P7) [E] A4'+A5'. Tell Mrs Y the positions of	

can do in this scenario	A2.	Welcome the visitors (M1,P5,V5) [E]	needed objects in the environment,
Right: Alternative tasks	A3.	Ask son and family to put the shoes in the shoe box	knowing them a priori, or detecting
		(V2,V3) [E]	them by using markers.
	A4.	Locate things as needed (slippers, sweets, tea, reading	A8'. Locate and indicate objects
		glasses) (M6,M10,P6,P7) [H]	needed for preparing the tray,
	A5.	Bring things as needed (slippers, sweets, tea, reading	knowing their position in the
		glasses) (M3,M4,M6,M9,M10,P1,P6) [H]	environment, or using markers Then
	A6.	Provide privacy to Mrs Y and family (M6,P4) [E]	suggest Mrs Y to bring the tray with
	A7.	Ask Mrs Y and family if they want something to drink	food to the table
		(P4,P9,V1,V2) [E]	A5"+A8". Permanently attach a tray
	A8.	Prepare and bring a tray with sweets and tea	to the robot's chest to bring objects
		(M3,M4,M5,M6,M9,M10,P1,P6,P7) [H]	A11'. Bring a hanger (on wheels)
	A9.	Take photos of Mrs Y and family (M7,P10) [E]	close to Mrs Y, and then bring it back
	A10.	Encourage Mrs Y to go for a walk (P2,V3,V6) [E]	to its place again.
	A11.	Help Mrs Y to put the coat on (M2,M3,M4,M9,P1,P2,P7)	A12'. Remind Mrs Y to switch on /
		[H]	off the lights
	A12.	Switch on and off lights (by connecting to the smart	
		environment) (M12,P4) [E]	
	A13.	Stay back at the house (M6) [E]	
	A14.	Say goodbye to Mrs Y son and his family (reply to the son's	
		goodbye) (M1,M9,P4,P5) [E]	
	A15.	Ask Mrs Y how she felt about her son's visit (P3,V4) [E]	
	A16.	Remind Mrs Y that the son's family will be coming the day	
		before Hinamatsuri (M13,P8,V3,V4,V7) [E]	
	A17.	Ask the son the time of next visit (or to enter it via the	
		touch screen) (V1,V2,V4) [E]	
Left: Robot motor	M1.	Coordinately move torso/ arms/ hands (A2,A14)	- ALMotion
capabilities required	M2.	Coordinately move base/ arms/ hands (A11)	- ALMotion
Right: Corresponding	M3.	Grasp objects (A5,A8,A11)	- no dedicated module, it could be
Pepper API (if any)			achieved with external libraries
	M4.	Carry lightweight items (A5,A8,A11)	- teasible it payload is <300 g
	M5.	Carry heavyweight items (A8)	- not feasible
	M6.	Navigate autonomously in the house (A4,A5,A6,A8,A13)	- ALNavigation
	M7.	Track moving objects / persons (A9)	- ALLandmarkDetection,
			ALColorBlobDetection,
			ALVisionRecognition,

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		ALCloseObjectDetection
	M8. Follow moving objects / persons (A1)	- ALVisionRecognition,
		ALCloseObjectDetection,
		ALNavigation
	M9. Reach a target / person (A5,A8,A11,A14)	- ALVisionRecognition,
		ALCloseObjectDetection,
		ALNavigation
	M10. Avoid unexpected static or moving obstacles / pe (A1,A4,A5,A8)	ersons - ALMotion
	M11. Open doors / windows (by communicating with s	smart - It could be achieved with a specific
	environment) (A1)	communication protocol
	M12. Operate appliance (by communicating with smar	rt - It could be achieved with a specific
	environment) (A12)	communication protocol
	M13. Show feelings (A16)	- ALLeds, ALRobotPosture,
		ALAnimationPlayer
Left: Robot perceptual	P1. Locate persons (distance and position) (A1,A5,A8	8,A11) - ALPeoplePerception
capabilities required	P2. Recognize posture, gesture, movements (A10,A1	1) - no dedicated module, it could be
Right: Corresponding		achieved with external libraries
Pepper API (if any)	P3. Recognize emotions (A15)	- ALMood
	P4. Recognize actions (A6,A7,A12,A14)	- no dedicated module, it could be
		achieved with external libraries
	P5. Recognize persons / faces (A2,A14)	- ALFaceDetection
	P6. Recognize obstacles / uneven ground (A4,A5,A8)	- ALLaser, ALSonar
	P7. Recognize/ Locate items (A1,A4,A8,A11)	- ALVisionRecognition
	P8. Retrieve / store information (A16)	- ALMemory
	P9. Recognize dialogue context (A7)	- ALSpeechRecognition
	P10. Take pictures (A9)	- ALPhotoCapture
Left: Robot verbal	V1. Ask Yes/ No questions (A7,A17)	- ALDialog, ALSpeechRecognition,
capabilities involved		ALTextToSpeech, ALTabletService
Right: Corresponding	V2. Ask multiple choice question (A3,A7,A15,A17)	- ALDialog, ALSpeechRecognition,
Pepper API (if any)		ALTextToSpeech, ALTabletService
	V3. Suggest / remind (A3,A10,A16)	- ALDialog, ALTextToSpeech,
		ALTabletService
	V4. Context dependent chat (A15,A16,A17)	- ALDialog, ALSpeechRecognition,
		ALTextToSpeech, ALTabletService
	V5. Greet <mark>(A2,A14)</mark>	- ALDialog, ALTextToSpeech

	V6.	Encourage/ praise (A10)	- ALDialog, ALTextToSpeech,
			ALTabletService
	V7.	Report information (A16)	- ALMemory, ALTextToSpeech,
			ALTabletService
Which "qualitative" robot	R1.	Way of greeting with non-family members	
behavior is expected to be	R2.	Invite other people to interact with the robot	
culturally dependent	R3.	Way of greeting and talking between mother and son	
	R4.	Communicating using indirect questions	
	R5.	Do not touch people	
Which behavior is	T1.	Speaks with soft tone	
"quantitatively" different	T2.	Speaks in low volume	
depending con culture	Т3.	Walks in low speed	
(volume and tone of voice,	T4.	Stands not too close to Mrs Y	
distance, velocity, etc)	T5.	Keeps acceptable distance from the visitor	
3.10 Mrs Yamada - Preparing for Dinner, Dinner Planning

Scenario name	Mrs Yamada - Preparing for dinner, Dinner planning	
Time of the day	Pre-dinner time	
Time of the day General Description	 Pre-dinner time <> On Sunday the care center has Setsubun festival that celebrates the coming of spring.¹ They need to prepare roasted soybeans because they do Mamemaki that is scattering the soya beans to drive the demons away. At dinner of Setsubun, they eat rolled sushi called as Ehomaki² that means roll of blessed direction. It is dangerous to eat it without cutting, they eat pieces of it orienting their faces to the blessed direction of the year. Mrs Y and other residents helped to open the bag of roasted soybeans and put some into plates to distribute to everyone. The carer puts a mask of Oni (devil)³to play a role of devil. They all go 	 Setsubun is 3rd Feb and means to divide seasons (winter <-> spring). Soy beans and Ehomaki. Japanese usually eat Ehomaki without cutting, orienting their face to the blessed direction that is different from every last year.
	out of the center and go to the garden, they throw the beans to the carer with the mask, saying "Oni ha soto, Fuku ha uchi" ³ . After the scattering of the beans, they get into the center, wash their hands, and prepare the dinner of Ehomaki. They eat a piece of Ehomaki orienting their faces to the blessed direction. When they eat Ehomaki, they make a wish in their mind. Then enjoy the dinner.	 3. Image of Mamemaki. Oni = devil, soto = out, Fuku = blessed, uchi =inside.
Functional areas of the	F1. Kitchen	
house involved	F2. Garden	
	F3. Dining Room	
Relevant objects involved	01. Bag of Soybean	
	O2. Plate O3. Mask of a devil	
	O2. Ehomaki	
Relevant persons	B1. Carer	
(in addition to user and caregiver)	B2. Other elderly	
What a human (formal or	H1. Ask to help open the bags of soy beans	

informal) caregiver shall /	H2.	Put some beans into plates			
can do in this scenario	H3.	Hand over the plates to all elderly			
	H4.	Put the mask			
	H5.	Play a role of devil and pretend to run from the beans			
	H6.	Help to wash hands			
	H7.	Hand over towel to dry hands			
	H8.	Prepare dinner			
	H9.	Suggest to think about what kind of wish they make when the	ney eat Ehomaki		
Cultural knowledge	C1.	Japanese festival of Setsubun			
involved (top level	C2.	Japanese way to celebrate coming spring			
concepts in the Cultural	C3.	Knowledge on how to do Mamemaki			
Knowledge hierarchy)	C4.	Knowledge on how to eat Ehomaki			
Which "qualitative"	D1.	Planning of scattering the beans			
caregiver behavior is	D2.	Awareness about who should be the devil			
expected to be culturally					
dependent					
Which behavior is	E1.	Polite and soft tone, low volume of voice			
"quantitatively" different	E2.	Moving about in calm slow manner			
depending on culture	E3.	Gestures are gentle and not too exaggerated	Gestures are gentle and not too exaggerated		
(volume and tone of voice,					
distance, velocity, etc.)					
Left: What the robot shall /	A1.	Remind Mrs Y that on Sunday the care center will	A4'+A5'.Tell Mrs Y the positions of		
can do in this scenario		celebrate Sestubun festival (P5,P8,V3) [E]	needed objects in the environment,		
Right: Alternative tasks	A2.	Ask Mrs Y information about Setstubun, Mamemaki and	knowing them a priori, or detecting		
		Ehomaki (P3,V1,V2,V4) [E]	them by using markers.		
	A3.	Encourage Mrs Y to help in preparing soybean plates	A3'+A6'. Encourage Mrs Y to help in		
		(M9,P8,V4,V6) [E]	preparing soybean plates		
	A4.	Locate things as needed (soybeans, plates, mask, ehomaki,	A7'. Encourage all elderly to collect		
		towel) (M5,M8,P6,P7) [H]	their plates		
	A5.	Bring things as needed (soybeans, plates, mask, ehomaki,	A9'+A10'. Play the role of the devil,		
		towel) (M2,M3,M4,M7,M8,P1,P6) [H]	but inside the home, running away		
	A6.	Hold a plate while Mrs Y put beans on it	from any person.		
		(M1,M2,M3,M6,P1,P2,P4) [H]	A12'. Help Mrs Y to prepare a tray		
	A7.	Deliver plates to all elderly (M3,M5,M7,M8,M9,P1,P6,V5)	with ehomaki by providing advise.		
		[H]	A13'. Suggest Mrs Y to bring the tray		

	<u>Δ</u> 8	Suggest Mrs Y to place the devil's mask on robot's face	to the table
	Αυ.		$\Delta 5'' + \Delta 13''$ Permanently attach a tray
	۵۵	Move with Mrs Y to the garden (and then back to the care	to the robot's chest to bring objects
	дэ.	center) (M6 M8 P1 P6) [H]	to the robot's chest to bring objects
	۸10	Play the role of the devil trying to run away from the	
	A10.	sovbeans (M5 M8 M9 P3 P4 P6 P9 V4) [H]	
	۸11	$\begin{array}{c} Soybeans (WS,WS,WS,WS,WS,WS,WS,WS,WS,WS,WS,WS,WS,W$	
	A11.	Propare a tray with chomaki (M2 M2 D7)[H]	
	A12.	Carry a tray with chomaki to the table	
	AIS.		
	A 1 A	(IVI1,IVI4,IVI5,IVI7,IVI8,P1,P0) [II]	
	A14.	Suggest Mirs Y to think about the wish she will make eating	
	A 1 E	EIIOIIIdKI (199, P3, P6, V3, V4, V0) [E] Toll Mrs V what is the blassed direction this year (D4 D2 V2)	
	AIJ.	[E]	
Left: Robot motor	M1.	Coordinately move base/ arms/ hands (A6,A13)	- ALMotion
capabilities required	M2.	Grasp objects (A5,A6,A12)	- no dedicated module, it could be
Right: Corresponding			achieved with external libraries
Pepper API (if any)	M3.	Carry lightweight items (A5,A6,A7,A12)	- feasible if payload is <300 g
	M4.	Carry heavyweight items (A13)	- not feasible
	M5.	Navigate autonomously in the house (A4,A5,A7,A10,A13)	- ALNavigation
	M6.	Follow moving objects / persons (A6,A9)	- ALVisionRecognition,
			ALCloseObjectDetection,
			ALNavigation
	M7.	Reach a target / person (A5,A7,A13)	- ALVisionRecognition,
			ALCloseObjectDetection,
			ALNavigation
	M8.	Avoid unexpected static or moving obstacles / persons	- ALMotion
		(A4,A5,A7,A9,A10,A13)	
	M9.	Show feelings (A3,A7,A10,A14)	- ALLeds, ALRobotPosture,
			ALAnimationPlayer
Left: Robot perceptual	P1.	Locate persons (distance and position) (A5,A6,A7,A9,A13)	- ALPeoplePerception
capabilities required	P2.	Recognize posture, gesture, movements (A6)	- no dedicated module, it could be
Right: Corresponding			achieved with external libraries
Pepper API (if any)	P3.	Recognize emotions (A2,A10,A14)	- ALMood
	P4.	Recognize actions (A6,A10,A15)	- no dedicated module, it could be
			achieved with external libraries

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	P5.	Recognize persons / faces (A1)	- ALFaceDetection
	P6.	Recognize obstacles / uneven ground	- ALLaser, ALSonar
		(A4,A5,A7,A9,A10,A13)	
	P7.	Recognize/ Locate items (A4,A12)	- ALVisionRecognition
	P8.	Retrieve / store information (A1,A3,A8,A11,A14,A15)	- ALMemory
	P9.	Keep track of time (A10)	- no dedicated module, it could be
			achieved with different solutions
Left: Robot verbal	V1.	Ask Yes/ No questions (A2)	- ALDialog, ALSpeechRecognition,
capabilities involved			ALTextToSpeech, ALTabletService
Right: Corresponding	V2.	Ask multiple choice questions (A2)	- ALDialog, ALSpeechRecognition,
Pepper API (if any)			ALTextToSpeech, ALTabletService
	V3.	Suggest / remind (A1,A8,A11,A14,A15)	- ALDialog, ALTextToSpeech,
			ALTabletService
	V4.	Context dependent chat (A2,A3,A10,A14)	- ALDialog, ALSpeechRecognition,
			ALTextToSpeech, ALTabletService
	V5.	Greet (A7)	 ALDialog, ALTextToSpeech
	V6.	Encourage/ praise (A3,A8,A14)	- ALDialog, ALTextToSpeech,
			ALTabletService
Which "qualitative" robot	R1.	Showing awareness of traditions and customs	
behavior is expected to be	R2.	Supporting caregivers in the playing the "devil" role	
culturally dependent			
Which behavior is	T1.	Speaks with soft tone	
"quantitatively" different	T2.	Speaks in low volume	
depending con culture	Т3.	Walks in low speed	
(volume and tone of voice,	T4.	Not too many gestures	
distance, velocity, etc)			

4. Mrs Khan – Script

<u>Mrs Khan,</u> is a 73 year old Muslim lady from Punjab. She moved to the UK soon after her marriage to start a new life. She and Mr Khan stayed with the family at first but after a couple of years - and with some financial help from the family to boost their savings- they managed to buy a house in the same street where their relatives lived ¹ .	 The extended family in collectivist societies will always try to help its members Arranged marriages with the young people consent are common. Marrying within the family is also common. It is also common to consult the Imam. Daughters often move in or near the in-laws
Mr Khan worked as a taxi driver often doing long hours and even night shifts to earn extra money. Mrs Khan stayed at home, to take care of their growing family. They had five daughters to raise. They worked really hard to provide and offer good marriage prospects to their daughters ² . They are all married now but unfortunately none of them lives nearby.	4. Ablution (Wudu) -Ritual purification/ washing/ cleaning before prayer (wash hands three times, using the right hand take water to the mouth and wash mouth three times, inhale water into the nose three times, wash face three times, wash lower arms three times, wipe head with wet hands, wipe ears inside and out, wash each of the feet starting from the right foot, do it three times). Any ornaments worn on hand and around the neck must be removed during ablution.
Mr Khan, died 5 years ago from bowel cancer. Mrs Khan, who has been suffering with high blood pressure for a number of years, had a mild stroke almost a year ago. Even though she has physically recovered, her memory has been slightly affected. She has now moved to a care home, since none of her daughters ³ is able to have her living with their families. As a devoted Muslim she performs her prayer five times a day –following all the rituals such as ablution ⁴ - and she believes that Allah will protect her from all her problems. Dressing up in the morning is not hard. Mrs Khan has a beautiful selection of salwar kameez (silk, cottons with different embroidery styles and colours), beautiful tunic tops, nice Kashmiri shawls, kurtas and dupattas ^{5,6} . She usually uses her salwar's dupatta to cover her head and shoulders. She chooses simple cotton salwar kameez that her daughter bought her the last time ⁷ they went shopping together. She will comb her hair nicely and wear a set of bangles ⁸ that match the colour of her salwar kameez. She will choose a nice warm woollen shawl and she is ready.	 5. Clothing and different ways of dressing. 6. Salwar tops, tunic tops with long sleeves, kurtas tops are worn by Muslim ladies. Kameez are loose trousers worn under the salwar, kurta or tunic tops. Dupatta is a long scarf that matches each outfit and covers head and shoulders. Modesty, loose garments and covering the body is very important for the Muslim ladies. 7. Way of showing her love and the expectation that children help their elderly parents 8. Colorful bracelets, they come in different colors and can be worn in both hands (maybe 6 or 12 in each lower arm). They can be expensive (gold, with precious stones) or very simple, inexpensive. 9. Shoes are not allowed in the house. Residents and guests leave these outside the front door or just inside next to the door. They walk bare foot in the house. 10. Close friends may hug but it is not necessary. 'As-Salamu Alaykum' translates to: 'peace be upon you' and you respond by 'Wa alaykum assalam,' which means upon you be peace. They also may perform a hand gesture called 'Adab' by raising their right hand with palm inwards towards the forehead.
It is early afternoon and her good friend Rashida along with her cousin Aysha, come over for a short visit. Rashida and Aysha leave their shoes outside ⁹ ; they come in, hug and say As-Salamu Alaykum ¹⁰ . They start	

speaking in Punjabi ¹¹ . She asks her carer to bring out some snacks ¹² , and make tea. They sit comfortably and continue to chat. Rashida's daughter is old enough to get married so they start discussing what	 There are many languages in India often associated with the regions. Punjabi is spoken in the region of Punjab. It is the 3rd most spoken language in the Indian sub-continent. Meat snacks such as 'keema samosas' or 'aloo ki tikki' 'chicken/aloo
the Imam and whether they should consult relatives in Punjab.	pakoras'.
On Sunday Mrs K's daughter, son in–law and granddaughter will be visiting for dinner. She needs to plan for dinner. She wants to make	13. Common for women who are related or close friends to discuss about the prospect of their daughters' marriage. Muslims prefer to marry within their extended families, religion and community.
chicken biryani ¹⁴ , her favourite dish but also lamb kebabs because her granddaughter likes them very much. She will need to get some	14. Biryani is a very typical Indian Muslim dish
pomegranate juice and some sweets as well, such as firni (baked rice	15. Typical Muslim sweets and the pomegranate is considered God's fruit.
pudding) or halwai ^{15,16,17} . She will call the local Indian or Pakistani	16. Muslims do not eat pork or drink alcohol
grocery shop to get her halal meats and the juice and sweets as she	17. Meat and poultry must be halal which is a special way to kill the animal
would like to get firni in nice clay pots ¹⁸ if possible.	18. A way of cooking rice pudding.
It is evening prayer time. Mrs Khan is wearing her dupatta over her	19. Makkah, holy city
head and shoulders and has taken her rings and bangles and hecklace before doing her ablution. She has laid her prayer mat on the floor facing Makkah ^{19,20} . She starts her prayer which will last about 5-7 minutes. She is surrounded by images of Makkah and Madinah and she believes that Allah ²¹ will always be there to protect her and her family.	20. The prayer starts by raising the hands to the ears or shoulders and saying 'Allahu Akbar' meaning God is great. During prayer the hands are held in a cupping position in front of the face which is occasionally wiped with the hands. Prayers always follow a set of specific movements and recited in Arabic. http://www.bbc.co.uk/religion/galleries/salah/ Ablution -Ritual purification before prayer
When she finishes her prayer Mrs Khan phones her daughter to remind her that tomorrow afternoon she will need to accompany her to the doctor. Her daughter is well educated and works in a large pharmaceutical company. She feels more confident having her with her.	21. Kismet

4.1 Mrs Khan - Morning Routine, Dressing

Scenario name	Mrs Khan - Morning routine, Dressing	
Time of the day	Morning	
General Description	<> Mrs K has a beautiful selection of salwar kameez (silk, cottons with different embroidery styles and colours), beautiful tunic tops, nice Kashmiri shawls, kurtas and dupattas ^{1,2} . She usually uses her salwar's dupatta to cover her head and shoulders . She chooses simple cotton salwar kameez that her daughter brought her the last time ³ they went shopping together. She will comb her hair nicely and wear a set of bangles ⁴ that match the colour of her salwar kameez. She will choose a nice warm woollen shawl and she is ready.	 Clothing and different ways of dressing. Salwar tops, tunic tops with long sleeves, kurtas tops are worn by Muslim ladies. Kameez are loose trousers worn under the salwar, kurta or tunic tops. Dupatta is a long scarf that matches each outfit and covers head and shoulders. Modesty, loose garments and covering the body is very important for the Muslim ladies. Way of showing her love and the expectation that children help their elderly parents Colourful bracelets, they come in different colours and can be worn in both hands (maybe 6 or 12 in each lower arm). They can be expensive (gold, with precious stones) or very simple, inexpensive. Loose garments are worn in order not to reveal the woman's figure thus is a way of maintain modesty.
Functional areas of the	F1. Bedroom – Bed area	
house involved	F2. Bedroom – Wardrobe area	
	F3. Bedroom – Drawers area	
	F4. Bedroom - dressing table area	
Relevant objects involved	01. Clothing	
	OZ. Jewellery (e.g. bangles)	
Polovant porsons	P1 No body	
(in addition to user and	DI. NO-DOUY	
(in addition to user and		
What a human (formal or	H1. Knowing names of clothing items . Asks Mrs K if she needs	help with dressing.

informal) caregiver shall /	H2.	Help Mrs K to choose salwar kameez, recommend colour or one of her favourite ones.		
can do in this scenario	H3.	Help her find the salwar's matching dupatta		
	H4.	Bring comb		
	H5.	Bring bangles.		
	H6.	Recommend to wear a warm shawl (colour and type)		
	H7.	Provide privacy		
Cultural knowledge	C1.	Maintaining traditional way of dressing		
involved (top level	C2.	Understand the importance of modesty for Muslim women		
concepts in the Cultural	C3.	Understand that the Muslim way of dressing depends on the	e country of origin and that they are a	
Knowledge hierarchy)		lot of variations.		
Which "qualitative"	D1.	Maintain a distance form Mrs K and ask permission to enter	the room and offer help.	
caregiver behaviour is	D2.	Praise politely and only if acceptable		
expected to be culturally	D3.	Assist with dressing if Mrs K would like that		
dependent	D4.	Turn away when Mrs K is changing		
Which behaviour is	E1.	Polite and soft tone of voice		
"quantitatively" different	E2.	Keep distance		
depending con culture	E3.	Nove at normal speed		
(volume and tone of voice,				
distance, velocity, etc.)				
Left: What the robot shall /	A1.	Locate objects if needed (clothes, jewels, comb)	A1'+A2'. Tell Mrs K the positions of	
can do in this scenario		(M5,M8,P5,P6) [H]	needed objects in the environment,	
Right: Alternative tasks	A2.	Bring objects if needed (clothes, jewels, comb)	knowing them a priori, or detecting	
		(M2,M3,M4,M5,M6,M8,P1,P5) [H]	them by using markers.	
	A3.	Suggest wearing one of the favourite salwar kameez	A2". Permanently attach a tray to the	
		(P4,P7,V1,V2,V3) [E]	robot's chest to bring objects	
	A4.	Open wardrobe with clothes	A4'. Open the wardrobe, by	
		(M1,M2,M6,M7,M8,M9,P5,P6) [H]	controlling its sliding doors within the	
	A5.	Ask Mrs K if she needs help while getting dressed	smart home	
		(P2,P4,V1,V4) [E]	A6'. Bring a hanger (on wheels) close	
	A6.	Help Mrs K wearing salwar tops, by holding it	to Mrs K, and then brings it back to its	
		(M1,M2,M3,M6,M8,P1,P2,P5,P6) [H]	place again.	
	A7.	Switch on/off lights when asked (M10) [H] A7'. Connect to automatic controls of		
	A8.	Provide privacy to Mrs K (M5,P4) [E]	lights.	
	A9.	Show interest and ask information about Indian Muslim		
		traditional dresses (M11,P7,V1,V2,V4) [E]		

	A10.	Make recommendation based on weather (warm shawl)	
		(P7,P8,V3,V4,V5) [E]	
	A11.	Praise Mrs K for her look (M11,P3,V4,V5) [E]	
	A12.	Encourage Mrs K to comb her hair (M11,V4,V5) [E]	
Left: Robot motor	M1.	Coordinately move base/ arms/ hands (A4,A6)	- ALMotion
capabilities required	M2.	Grasp objects (A2,A4,A6)	- no dedicated module, it could be
Right: Corresponding			achieved with external libraries
Pepper API (if any)	M3.	Carry lightweight items (A2,A6)	 feasible if payload is <300 g
	M4.	Carry heavyweight items (A2)	- not feasible
	M5.	Navigate autonomously in the house (A1,A2,A8)	- ALNavigation
	M6.	Reach a target / person (A2,A4,A6)	- ALVisionRecognition,
			ALCloseObjectDetection,
			ALNavigation
	M7.	Pull objects (A4)	- no dedicated module, it could be
			achieved with external libraries
	M8.	Avoid unexpected static or moving obstacles / persons (A1,A2,A4,A6)	- ALMotion
	M9.	Open doors / windows (by communicating with smart environment) (A4)	- It could be achieved with a specific communication protocol
	M10.	Operate appliance (by communicating with smart	- It could be achieved with a specific
		environment) (A7)	communication protocol
	M11.	Show feelings (A9,A11,A12)	- ALLeds, ALRobotPosture,
			ALAnimationPlayer
Left: Robot perceptual	P1.	Locate persons (distance and position) (A2,A6)	- ALPeoplePerception
Capabilities required	P2.	Recognize posture, gesture, movements (AS,Ab)	- no dedicated module, it could be
Right: Corresponding	20	Decoming emotions (A11)	achieved with external libraries
Pepper API (If any)	P3.	Recognize emotions (A11)	- ALIVIOOD
	Ρ4.	Recognize actions (A3,A5,A8)	- no dedicated module, it could be achieved with external libraries
	P5.	Recognize obstacles / uneven ground (A1,A2,A4,A6)	- ALLaser, ALSonar
	P6.	Recognize/ Locate items (A1,A4,A6)	- ALVisionRecognition
	P7.	Retrieve / store information (A3,A9,A10)	- ALMemory
	P8.	Recognize weather/ temperature (A10)	- no dedicated module, it could be
			checked the broadcast on internet
			or by communicating with the smart environment

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CARESSES

Left: Robot verbal	V1.	Ask Yes/ No questions (A3,A5,A9)	- ALDialog, ALSpeechRecognition,
capabilities involved			ALTextToSpeech, ALTabletService
Right: Corresponding	V2.	Ask multiple choice questions (A3,A9)	 ALDialog, ALSpeechRecognition,
Pepper API (if any)			ALTextToSpeech, ALTabletService
	V3.	Suggest / remind (A3,A10)	 ALDialog, ALTextToSpeech,
			ALTabletService
	V4.	Context dependent chat (A5,A9,A10,A11,A12)	- ALDialog, ALSpeechRecognition,
			ALTextToSpeech, ALTabletService
	V5.	Encourage/ praise (A10,A11,A12)	- ALDialog, ALTextToSpeech,
			ALTabletService
Which "qualitative" robot	R1.	Turning away or leaving the room when Mrs K is changing/dressing	
behavior is expected to be	R2.	Enters the room after permission given	
culturally dependent	R3.	Exits the room when required by Mrs K	
	R4.	Behaving politely and respectfully	
	R5.	Provide privacy	
Which behavior is	T1.	Speaks with soft tone	
"quantitatively" different	T2.	Speaks with normal volume	
depending con culture	Т3.	Walks in normal speed	
(volume and tone of voice,	T4.	Keeps acceptable distance from Mrs K: stand close to Mrs K only when helping with dressing	
distance, velocity, etc)			

4.2 Mrs Khan- After lunch routine, Social activities (drinking tea, visitors, talking)

Scenario name	Mrs Khan - After lunch routine, Social activities (drinking tea, visitors, talking)			
Time of the day	Early afternoon			
General Description	<> It is early afternoon and her good friend Rashida along with her cousin Aysha, come over for a short visit. Rashida and Aysha leave their shoes outside ⁰ ; they come in, hug and say As-Salamu Alaykum ¹ . They start speaking in Punjabi ² .	1. Shoes are not allowed in the house. Residents and guests leave these outside the front door or just inside next to the door. They walk bare foot in the house.		
	She asks her carer to bring out some snacks ^{3,} and make tea. They sit comfortably and continue to chat. Rashida's daughter is old enough to get married so they start discussing what needs to be done ⁴ such as finding suitable match, may be consulting the Imam and whether they should consult relatives in Punjab.	2. Close friends may hug but it is not necessary. 'As-Salamu Alaykum' translates to: 'peace be upon you' and you respond by 'Wa alaykum assalam,' which means upon you be peace. They also may perform a hand gesture called 'Adab' by raising their right hand with palm inwards towards the forehead.		
		3. There are many languages in India often associated with the regions. Punjabi is spoken in the region of Punjab. It is the 3 rd most spoken language in the Indian sub- continent.		
		 Meat snacks such as 'keema samosas' or 'aloo ki tikki' 'chicken/aloo pakoras'. 		
		5. Common for women who are related or close friends to discuss about the prospect of their daughters' marriage. Muslims prefer to marry within their extended families, religion and community.		
Functional areas of the	F1. Living room	•		
house involved	F2. Kitchen – cabinets, refrigerator			
	F3. Front door			

Relevant objects involved	01.	Door		
	02.	Cups, plates, paper napkins		
	03.	Packages of snacks		
Relevant nersons	R1	Friend (Rashida)		
(in addition to user and	B2	Cousin (Avsha)		
(in addition to user and	02.			
What a human (formal or	H1	Heln make the tea		
informal) caregiver shall /	H2.	Open the door for visitors and greet appropriately		
can do in this scenario	H3.	Guide the visitors into the living room and invite them to sit	down	
	H4.	Help in the kitchen by getting the cups, plates, making tea a	nd food	
	H5.	Serve the tea and food		
	H6.	Informs Mrs K she will leave and return in 1 hour		
Cultural knowledge	C1.	Knowledge on how to host visitors		
involved (top level	C2.	Knowledge of marriage arrangements		
concepts in the Cultural	C3.	Customs related to greeting and entering the house		
Knowledge hierarchy)	C4.	Knowledge about Indian Muslim snacks eaten in the afternoon		
	C5.	Knowledge regarding the language/s spoken in Punjab		
Which "qualitative"	D1.	Greeting appropriately		
caregiver behavior is	D2.	Abstaining from becoming involved in the conversation between Mrs K and visitors		
expected to be culturally	D3.	No touching		
dependent				
Which behavior is	E1	Polite and normal tone of voice		
"auantitatively" different	E1.	Keen small level of physical distance		
depending con culture	E2.	Normal speed of walking		
(volume and tone of voice	LJ.	Normal speed of waiking		
distance, velocity, etc.)				
Left: What the robot shall /	A1.	Open the door for the visitors (M4.M5.M6.M8.P4) [H]	A1. Connect to the automatic doors of	
can do in this scenario	A2.	Greet the visitors, performing 'adab' greeting hand gesture	the smart environment	
Right: Alternative tasks		and saving "As-Salamu Alaykum" (M1,M10,P1,P3,V4,V5)	A6'+A7'. Tell Mrs K the positions of	
C C		[E]	needed objects in the environment,	
	A3.	Ask the visitors to remove their shoes and leave them by	knowing them a priori, or detecting	
		the door (P2,P6,V3,V6) [E]	them by using markers.	
	A4.	Guide the visitors to the living room and invite them to sit	A7". Permanently attach a tray to the	
		down (M4,M5,M6,P4,V3,V4,V6) [E]	robot's chest to bring objects	

	A5.	Ask Mrs K if its help if needed (P2,V1,V2) [E]	A9'. Reproduce the selected radio
	A6.	Locate objects as needed (cups, plates, paper	channel via the robot's loudspeakers.
		napkins,snacks) (M4,M6,P4,P5) [H]	
	A7.	Bring objects as needed (cups, plates, paper	
		napkins,snacks) (M2,M3,M4,M5,M6,P1,P4) [H]	
	A8.	Ask Mrs K if they want it to entertain them with some	
		Indian songs or music (P2,P6,V1) [E]	
	A9.	In case, play some Indian music (M7,M9) [H]	
	A10.	Provide privacy (M4,M6,P2,P4) [E]	
Left: Robot motor	M1.	Coordinately move base/ arms/ hands (A2)	- ALMotion
capabilities required	M2.	Grasp objects (A7)	- no dedicated module, it could be
Right: Corresponding			achieved with external libraries
Pepper API (if any)	M3.	Carry lightweight items (A7)	- feasible if payload is <300 g
	M4.	Navigate autonomously in the house (A1,A4,A6,A7,A10)	- ALNavigation
	M5.	Reach a target / person (A1,A4,A7)	- ALVisionRecognition,
			ALCloseObjectDetection, ALNavigation
	M6.	Avoid unexpected static or moving obstacles / persons	- ALMotion
		(A1,A4,A6,A7,A10)	
	M7.	Turn on radio / TV /cassette player <mark>(A9)</mark>	- ALAudioPlayer
			For external devices, It could be
			achieved with a specific
			communication protocol
	M8.	Open doors / windows (by communicating with smart	- It could be achieved with a specific
		environment) (A1)	communication protocol
	M9.	Operate appliance (by communicating with smart	- It could be achieved with a specific
		environment) (A9)	communication protocol
	M10.	Show feelings (A2)	- ALLeds, ALRobotPosture,
			ALAnimationPlayer
Left: Robot perceptual	P1.	Locate persons (distance and position) (A2,A7)	- ALPeoplePerception
capabilities required	P2.	Recognize actions (A3,A5,A8,A10)	- no dedicated module, it could be
Right: Corresponding			achieved with external libraries
Pepper API (if any)	P3.	Recognize persons / faces (A2)	- ALFaceDetection
	P4.	Recognize obstacles / uneven ground (A1,A4,A6,A7,A10)	- ALLaser, ALSonar
	P5.	Recognize/ Locate items (A6)	- ALVisionRecognition
	P6.	Retrieve / store information (A3,A8)	- ALMemory

Left: Robot verbal	V1.	Ask Yes/ No questions (A5,A8)	- ALDialog, ALSpeechRecognition,
capabilities involved			ALTextToSpeech, ALTabletService
Right: Corresponding	V2.	Ask multiple choice questions (A5)	- ALDialog, ALSpeechRecognition,
Pepper API (if any)			ALTextToSpeech, ALTabletService
	V3.	Suggest / remind (A3,A4)	 ALDialog, ALTextToSpeech,
			ALTabletService
	V4.	Context dependent chat (A2,A4)	- ALDialog, ALSpeechRecognition,
			ALTextToSpeech, ALTabletService
	V5.	Greet (A2)	 ALDialog, ALTextToSpeech
	V6.	Encourage/ praise (A3,A4)	 ALDialog, ALTextToSpeech,
			ALTabletService
Which "qualitative" robot	R1.	Friendly and appropriate greeting	
behavior is expected to be	R2.	Asks visitors if they would like some more tea or snacks	
culturally dependent	R3.	Asks if they are enjoying the tea and snacks	
	R4.	Asks if they wish it to remain or leave the room	
Which behavior is	T1.	Speaks with normal tone	
"quantitatively" different	T2.	Speaks in normal volume	
depending con culture	Т3.	Walks in normal speed	
(volume and tone of voice,	T4.	Keeps small distance from Mrs K	
distance, velocity, etc)	T5.	Keeps small distance from the visitor	

4.3 Mrs Khan - Preparing for Dinner, Dinner Planning

Scenario name	Mrs Khan - Preparing for dinner, Dinner planning			
Time of the day	Pre-dinner time			
General Description	<> On Sunday Mrs K's daughter, son in-law and granddaughter 1. Biryani is a very typical Indian Muslim dish			
	 will be visiting for dinner. She needs to plan for dinner. She wants to make chicken⁴ biryani, her favorite dish but also lamb^{3, 4} kebabs because her granddaughter likes them very much. She will need to <i>Typical Muslim sweets and the pomegranate is considered God's fruit.</i> 			
	get some pomegranate juice and some sweets as well, such as firni 3. Muslims do not eat pork or drink alcohol (baked rice pudding) or balwai ²			
	She will call the local Indian or Pakistani grocery shop to get her halal meats and the juice and sweets as she would like to get firni			
	in nice clay pots ⁵ if possible. <i>5. A way of cooking rice pudding.</i>			
	6. The left hand is considered the dirty hand whilst the right is the clean hand			
Functional areas of the	F1. Living room			
house involved	F2. kitchen			
Relevant objects involved	O1. Phone			
	O2. Phone book/personal phone book			
	O3. Cooking pots and cooking tools			
	O4. Crockery and cutlery			
Relevant persons	P1. Store employee			
(in addition to user and				
caregiver)				
What a human (formal or	H1. Remind her that she is having family over and she needs to plan			
informal) caregiver shall /	H2. Discuss the menu			
can do in this scenario	H3. What is needed for the different dishes			
	H4. Go through the kitchen cabinets and or refrigerator and check what is needed and what is missing			
	H5. Make a list of the missing items			
	H6. Bring the phone and phone book			
	H7. Call the local indian/Pakistani shop			
	H8. Help in case she needs to find new phone numbers			
	H9. Place the order			

Cultural knowledge	C1.	Idian Muslim kouzine and diet restrictions		
involved (top level	C2.	Different Muslim Indian dishes and way of preparation		
concepts in the Cultural	C3.	Knowing about Muslim dietary restrictions (not eating pork, eating halal meat)		
Knowledge hierarchy)	C4.	Knowing religious festivals (Ramadan, Eid) and what is perm	itted to eat during these festivals,	
		periods of fasting.		
	C5.	Indian/Pakistani stores that source Muslim products from India		
	C6.	Names of different dishes		
Which "qualitative"	D1.	Planning of dinner		
caregiver behavior is	D2.	Help with cooking according to Mrs K's instructions		
expected to be culturally	D3.	Prepare the dining table with small water finger bowls		
dependent	D4.	Use of right and left hand when cooking, serving food, eating	⁵⁶	
	D4.	Speaking some words in Mrs K's mother tongue (if carer is al	so Indian)	
	D5.	Speaking in friendly way to store keeper (If regular custome	r)	
Which behavior is	E1.	Polite and soft tone, low volume of voice		
"quantitatively" different	E2.	Moving about in calm manner		
depending on culture	E3.	Gestures are gentle and not too exaggerated		
(volume and tone of voice,				
distance, velocity, etc.)				
Left: What the robot shall /	A1.	Remind Mrs K that on Sunday family will come for dinner	A5'+A6'. Knowing the recipe and	
can do in this scenario		(P8,V3) [E]	needed ingredients (A3) the robot	
Right: Alternative tasks	A2.	Recommend dishes, taking into account the dietary	walk with Mrs K and ask (Y/N) if	
		restrictions of Muslim religion (M12,P8,P9,V3,V5) [E]	ingredient X is available, making a list	
	A3.	Provide recipes (P8,P10,V4) [E]	of the ones missing.	
	A4.	Ask Mrs K if she needs help while cooking (P4,V1,V2) [E]	A7'+A8'. Tell Mrs K the positions of	
	A5.	Walk with Mrs K as she goes through her cabinets and	needed objects in the environment,	
		refrigerator (M6,M8,P1,P6) [H]	knowing them a priori, or detecting	
	A6.	Ask Mrs K if she wants it to make a shopping list and	them by using markers.	
		prepare it on his tablet (P4,P8,V1) [H]	A8". Permanently attach a tray to the	
	A7.	Locate things as needed (phone, phone book, food, dishes,	robot's chest to bring objects	
		kitchen book) (M5,M8,P6,P7) [H]	A10'. Place a skype call to the shop	
	A8.	Bring things as needed (phone, phone book, food, dishes,	A11'. Open the automatic door by	
		kitchen book) (M2,M3,M5,M7,M8,P1,P6) [H]	connecting to the smart environment.	
	A9.	Ask Mrs C if she needs any phone numbers (P9,V1,V5) [E]	A12'. Tell Mrs K that the store	
	A10.	Place a phone call, saying "please hold on" and then asking	employee arrived	
		Mrs C to talk (M11,P8,V7,V8) [H]	A13'. Suggest Mrs K how to lay the	

	A11.	Open door to the store employee	table (i.e. using terms like "to the
		(M5,M7,M8,M10,P5,P6,P7,V5,V6) [H]	right")
	A12.	Help in carrying the shopping	A13". Provide general comments and
		(M1,M3,M4,M5,M8,P2,P6,P7) [H]	suggestions about table preparation
	A13.	Help with laying the table (M1,M2,M3,M5,M7,M8,P6,P7) [H]	A15'. Connect to internet radio and let Mrs K listen to her favorite music via
	A14.	Ask Mrs K if she wants to be entertained with some Indian songs (P3,P4,V1,V2) [E]	the Pepper's loudspeakers. A17'. Encourage Mrs K to carry out
	A15.	In case, entertain Mrs K whilst cooking by playing her favourite songs (M9,M11,M12,P8) [E]	dirty dishes after dinner
	A16.	Ask Mrs K if the food tastes nice and if she needs help with cleaning the kitchen (P4,V1) [E]	
	A17.	Carry out dirty dishes after dinner	
		(M2,M3,M5,M7,M8,P6,P7) [H]	
Left: Robot motor	M1.	Coordinately move base/ arms/ hands (A12,A13)	- ALMotion
capabilities required	M2.	Grasp objects (A8,A13,A17)	- no dedicated module, it could be
Right: Corresponding			achieved with external libraries
Pepper API (if any)	M3.	Carry lightweight items (A8,A12,13,A17)	- feasible if payload is <300 g
	M4.	Carry heavyweight items (A12)	- not feasible
	M5.	Navigate autonomously in the house (A7,A8,A11,A12,A13,A17)	- ALNavigation
	M6.	Follow moving objects / persons (A5)	- ALVisionRecognition,
			ALCloseObjectDetection,
			ALNavigation
	M7.	Reach a target / person (A8,A11,A13,A17)	- ALVisionRecognition,
			ALCloseObjectDetection,
			ALNavigation
	M8.	Avoid unexpected static or moving obstacles / persons (A5,A7,A8,A11,A12,A13,A17)	- ALMotion
	M9.	Turn on radio / TV /cassette player (A15)	- ALAudioPlayer
			For external devices, It could be
			achieved with a specific
			communication protocol
	M10.	Open doors / windows (by communicating with smart	- It could be achieved with a specific
		environment) (A11)	communication protocol
	M11.	Operate appliance (by communicating with smart	- It could be achieved with a specific

		environment) (A10,A15)	communication protocol
	M12.	Show feelings (A2,A15)	- ALLeds, ALRobotPosture,
			ALAnimationPlayer
Left: Robot perceptual	P1.	Locate persons (distance and position) (A5,A8)	- ALPeoplePerception
capabilities required	P2.	Recognize posture, gesture, movements (A12)	- no dedicated module, it could be
Right: Corresponding			achieved with external libraries
Pepper API (if any)	P3.	Recognize emotions (A14)	- ALMood
	P4.	Recognize actions (A4,A6,A14,A16)	- no dedicated module, it could be
			achieved with external libraries
	P5.	Recognize persons / faces (A11)	- ALFaceDetection
	P6.	Recognize obstacles / uneven ground	- ALLaser, ALSonar
		(A5,A7,A8,A11,A12,A13,A17)	
	Ρ7.	Recognize/ Locate items (A7,A11,A12,A13,A17)	- ALVisionRecognition
	P8.	Retrieve / store information (A1,A2,A3,A6,A10,A15)	- ALMemory
	P9.	Recognize dialogue context (A2,A9)	- ALSpeechRecognition
	P10.	Use search engines for finding information (A3)	- ALTabletService
Left: Robot verbal	V1.	Ask Yes/ No questions (A4,A6,A9,A14,A16)	- ALDialog, ALSpeechRecognition,
capabilities involved			ALTextToSpeech, ALTabletService
Right: Corresponding	V2.	Ask multiple choice questions (A4,A14)	- ALDialog, ALSpeechRecognition,
Pepper API (if any)			ALTextToSpeech, ALTabletService
	V3.	Suggest / remind (A1,A2)	- ALDialog, ALTextToSpeech,
			ALTabletService
	V4.	List instructions (A3)	- ALDialog, ALTextToSpeech,
			ALTabletService
	V5.	Context dependent chat (A2,A9,A11)	- ALDialog, ALSpeechRecognition,
			ALTextToSpeech, ALTabletService
	V6.	Greet (A11)	 ALDialog, ALTextToSpeech
	V7.	Encourage/ praise (A10)	- ALDialog, ALTextToSpeech,
			ALTabletService
	V8.	Place a phone call (A10)	- ALTabletService, or it could be
			achieved with external libraries
Which "qualitative" robot	R1.	Sings to Mrs K	
behavior is expected to be	R2.	Keeps Mrs K company	
culturally dependent	R3.	Makes itself available to help Mrs K	
	R4.	Encourages Mrs K by referring to how good the various dish	es she is making look

	R5.	No touching
Which behavior is	T1.	Speaks with soft tone
"quantitatively" different	T2.	Speaks in low volume
depending con culture	Т3.	Walks at low speed
(volume and tone of voice,	T4.	Stands not too close to Mrs K unless it is helping her with something
distance, velocity, etc)	T5.	Not too many gestures

4.4 Mrs Khan - Evening Routine, Pray

Scenario name	Mrs Khan - Evening routine, Pray	
Time of the day	Evening	
General Description	<> It is evening prayer time ¹ . Mrs K is wearing her dupatta ² and has taken her rings and bangles and necklace before doing her ablution ³ . She has laid her prayer mat on the floor facing Makkah ^{4,5} . She starts her prayer which will last about 5-7 minutes. She is surrounded by images of Makkah and Madinah and she believes that Allah will always be there to protect her and her family. When she finishes, Mrs K phones her daughter to remind her that tomorrow afternoon she will need to accompany her to her doctor's appointment. Her daughter is well educated and works in a large pharmaceutical company. She feels more confident having her with her.	 Adult Muslims should pray 5 times a day. Salat is the obligatory Muslim prayers, performed five times each day by Muslims. It is the second Pillar of Islam. Salat al-fajr: dawn, before sunrise Salat al-zuhr: midday, after the sun passes its highest Salat al-'asr: the late part of the afternoon Salat al-maghrib: just after sunset Salat al-'isha: between sunset and midnight All Muslims try to do this. Indian Muslim women do not wear the traditional hijab but cover their head with their dupatta which is a long scarf that is worn around their neck and shoulders, when in presence of men, during prayer and when outside.
		 Ablution (Wudu) -Ritual purification/ washing/ cleaning before prayer (wash hands three times, using the right hand take water to the mouth and wash mouth three times, inhale water into the nose three times, wash face three times, wash lower arms three times, wipe head with wet hands, wipe ears inside and out, wash each of the feet starting from the right foot, do it three times). Any ornaments worn on hand and around the neck must be removed during ablution. Makkah, holy city The prayer starts by raising the hands to the ears or shoulders and saving 'Allahu

			Akbar' meaning God is great. During prayer the hands are held in a cupping position in front of the face which is occasionally wiped with the hands. Prayers always follow a set of specific movements and recited in Arabic. <u>http://www.bbc.co.uk/religion/galleries/s</u> <u>alah/</u>
Functional areas of the	F1.	Bedroom	
house involved	F2.	Bathroom	
Relevant objects involved	01.	Praying mat	
	02.	IOWEIS	
	03.	Hijab Drever book (Over/or	
	04.	Prayer book/Quar an	
	05.	Dhone	
Relevant persons	D1	No-one	
(in addition to user and	11.	NO-One	
caregiver)			
What a human (formal or	H1.	Bring her dupatta if she is not wearing it (female carer)	
informal) caregiver shall /	H2.	Bring her praying mat	
can do in this scenario	H3.	Place the mat on the floor (correct position/facing to Makkal	h)
	H4.	Asking whether she needs help with washing before prayer	
	H5.	Keeping quiet during prayer	
	H6.	Responding to Mrs K's needs during prayer e.g help her sit o	on the floor
	H7.	Provide privacy	
	H8.	Reminder to call her daughter	
	H9.	Call the daughter	
Cultural knowledge	C1.	Muslim way of praying :	
involved (top level		a) To whom - Allah	
concepts in the Cultural		b) How – the process /behaviour e.g washing before praying	g (ablution), sitting on lower legs on
Knowledge hierarchy)		prayer mat, facing Makkah, movements during prayer, wor	ds
		c) What – the objects used e.g prayer mat, Quar'an,	
	C2.	Maintaining a designated mat for prayer	
	C3.	Understanding the importance of religion in her life	
	C4.	Family expectations	

Which "qualitative"	D1.	(If carer non-Muslim) show interest in learning about Islam a	ind customs during prayer
caregiver behaviour is	D2.	Knowing the times of the day for praying	
expected to be culturally	D3.	Knowing how long the person normally prays	
dependent	D4.	Helping person's position during praying	
	D5.	Maintaining Mrs K 's privacy and silence	
	D6.	Show respect for the customs and process of the prayer	
	D7.	Ask Mrs K how she feels after the prayer	
	D8.	Knowing the importance of family	
Which behaviour is	E1.	Move gently in the room	
"quantitatively" different	E2.	Speak softly whilst helping with preparation for prayer	
depending on culture	E3.	Keep acceptable distance from Mrs K	
(volume and tone of voice,	E4.	Polite and soft tone of voice	
distance, velocity, etc.)	E5.	Speaking softly, ask Mrs K how she feels after the prayer	
Left: What the robot shall /	A1.	Show interest in Mrs K' praying customs by asking her	A6'. Encourage Mrs K to stand or sit
can do in this scenario		about her religion e.g how long she normally prays for,	A6". Suggest Mrs K that she can put
Right: Alternative tasks		how many times a day, words reciting, etc	some objects in the robot hands or in
		(M9,P4,P5,P8,V2,V4) [E]	a tray permamently attached to the
	A2.	Indicate correct position for praying (facing to Makkah)	robot's chest while she is standing or
		(P2,P8,V7) [E]	sitting.
	A3.	Ask Mrs K if she needs help with washing before praying	A8'+A9'. Tell Mrs K the positions of
		(e.g., if she need the towel) (P4,V1) [E]	needed objects in the environment,
	A4.	Ask Mrs K if she needs anything or if she want it to leave	knowing them a priori, or detecting
		the room (P4,V1,V2,V4) [E]	them by using markers.
	A5.	If in the room, provide privacy, observing Mrs C quietly	A11'. Provide general comments
		during prayer (M5,M6,M8,P6) [E]	about religion.
	A6.	Assist Mrs K to stand or sit on the floor	A12'. Suggest Mrs K to drink a glass of
		(M1,M4,M7,M8,P1,P2,P6) [H]	water
	A7.	Give Mrs K time checks (P4,P9,V3,V7) [E]	A9"+A12. Permanently attach a tray
	A8.	Locate things as needed (prayer mat, dupatta, towel, hijab,	to the robot's chest to bring objects
		prayer book) (M5,M8,P6,P7) [H]	Lightweight objects
	A9.	Bring things as needed (prayer mat, dupatta, towel, hijab,	
		prayer book) (M2,M3,M5,M7,M8,P1,P6) [H]	
	A10.	Ask Mrs K if she is comfortable or if she needs anything	
		else to make her comfortable (P2,V1,V2) [E]	
	A11.	Ask Mrs K how she feels after praying and comment on her	
		peaceful appearance after praying (M9,P3,V2,V4,V5) [H]	

	A12. Bring Mrs K a glass of water to drink at the end of praye	r
	(M2,M3,M4,M7,M8,P1,P4,P6,P7) [H]	
	A13. Remind Mrs K to call her daughter (P8,P9,V3,V5) [E]	
	A14. Place a phone/skype call to the daughter, saying "Please	2
	hold on" and asking Mrs K to talk (P8,V4,V5,V6) [E]	
Left: Robot motor	M1. Coordinately move base/ arms/ hands (A6)	- ALMotion
capabilities required	M2. Grasp objects (A9,A12)	- no dedicated module, it could be
Right: Corresponding		achieved with external libraries
Pepper API (if any)	M3. Carry lightweight items (A9,A12)	- feasible if payload is <300 g
	M4. Support for equilibrium/standing/sitting (A6)	- not feasible
	M5. Navigate autonomously in the house (A5, A8, A9, A12)	- ALNavigation
	M6. Track moving objects / persons (A5)	- ALLandmarkDetection,
		ALColorBlobDetection,
		ALVisionRecognition,
		ALCloseObjectDetection
	M7. Reach a target / person (A6,A9,A12)	- ALVisionRecognition,
		ALCloseObjectDetection,
		ALNavigation
	M8. Avoid unexpected static or moving obstacles / persons	- ALMotion
	(A5,A6,A8,A9,A12)	
	M9. Show feelings (A1,A11)	- ALLeds, ALRobotPosture,
		ALAnimationPlayer
Left: Robot perceptual	Locate persons (distance and position) (A6,A9,A12)	- ALPeoplePerception
capabilities required	P1. Recognize posture, gesture, movements (A2,A6,A10)	- no dedicated module, it could be
Right: Corresponding		achieved with external libraries
Pepper API (if any)	P2. Recognize emotions (A11)	- ALMood
	P3. Recognize actions (A1,A3,A4,A7,A12)	- no dedicated module, it could be
		achieved with external libraries
	P4. Recognize persons / faces (A1)	- AIFaceDetection
	P5. Recognize obstacles / uneven ground (A5,A6,A8,A9,A12) - ALLaser, ALSonar
	P6. Recognize/ Locate items (A8,A12)	- ALVisionRecognition
	P7. Retrieve / store information (A1,A2,A13,A14)	- ALMemory
	P8. Keep track of time (A7,A13)	- no dedicated module, it could be
		achieved with external libraries
Left: Robot verbal	V1. Ask Yes/ No questions (A3,A4,A10)	- ALDialog, ALSpeechRecognition,

capabilities involved			ALTextToSpeech, ALTabletService	
Right: Corresponding	V2.	Ask multiple choice questions (A1,A4,A10,A11)	 ALDialog, ALSpeechRecognition, 	
Pepper API (if any)			ALTextToSpeech, ALTabletService	
	V3.	Suggest / remind (A7,A13)	 ALDialog, ALTextToSpeech, 	
			ALTabletService	
	V4.	Context dependent chat (A1,A4,A11,A14)	- ALDialog, ALSpeechRecognition,	
			ALTextToSpeech, ALTabletService	
	V5.	Encourage/ praise (A11,A13,A14)	- ALDialog, ALTextToSpeech,	
			ALTabletService	
	V6.	Place a phone call <mark>(A14)</mark>	- ALTabletService, or it could be	
			achieved with external libraries	
	V7.	Report information (A2,A7)	- ALMemory, ALTextToSpeech,	
			ALTabletService	
Which "qualitative" robot	R1.	Show interest in learning about Islam and customs during pr	ayer	
behavior is expected to be	R2.	Knowing the time of the day for praying		
culturally dependent	R3.	Knowing how long the person normally prays	Knowing how long the person normally prays	
	R4.	Knowing that Mrs K needs to wash before prayer		
	R5.	Knowing that she needs to cover her head with the dupatta		
	R6.	Helping person's position during praying		
	R7.	Maintaining Mrs K 's privacy and silence		
	R8.	Show respect for the customs and process of the prayer		
	R9.	Knowing that Mrs K needs to connect with her daughter		
Which behavior is	T1.	Speaks with soft tone whilst helping with preparation for pra	ayer	
"quantitatively" different	T2.	Walks with low speed		
depending con culture	Т3.	Keeps acceptable distance from Mrs K		
(volume and tone of voice,	T4.	Speaks with soft tone whilst asking how she feels after te pra	ayer	
distance, velocity, etc)				