



CARESSES
Culturally-Aware Robots and Environmental
Sensor Systems for Elderly Support



Work Package 1: Transcultural Robotic Nursing

Deliverable D1.1: Detailed scenarios

Lead Beneficiary: MU

Deliverable Leader: Irena Papadopoulos MU

Contributors: Irena Papadopoulos MU
Christina Koulouglioti MU
Antonio Sgorbissa UNIGE
Carmine Recchiuto UNIGE
Hiroko Kamide NAGOYA
Nak Young Chong JAIST
Jaeryoung Lee CU
Alessandro Saffiotti ORU
Edouard Lagrue SBRE
Chris Papadopoulos BEDS

Deliverable No.	D1.1
Due Date	31/3/2017
Issue Date	30/3/2017
Status	<input type="checkbox"/> Draft <input type="checkbox"/> Working <input checked="" type="checkbox"/> Released <input type="checkbox"/> Delivered to EC <input type="checkbox"/> Approved by EC

Dissemination level	
X	PU =Public
	PP = Restricted to other programme participants (including the Commission Services)
	RE = Restricted to a group specified by the consortium (including the Commission Services)
	CO = Confidential, only for members of the consortium (including the Commission Services)
Document history	

V	Date	Author	Description
0.1	14/02/2017	Irena Papadopoulos / Christina Koulouglioti	2 Mrs C scenario tables ready
0.2	17/02/2017	Antonio Sgorbissa	Scenario template revised
0.3	24/02/2017	Irena Papadopoulos/ Christina Koulouglioti	7 Mrs C scenario tables ready and circulated to partners
0.4	27/02/2017	Carmine Recchiuto	7 Mrs C scenario tables revised and uploaded
0.5	5/3/2017	Hiroko Kamide	3 Mrs Y scenario tables ready and circulated to partners
0.6	6/3/2017	Irena Papadopoulos/ Christina Koulouglioti	7 Mrs S scenario tables ready and circulated to partners
0.7	6/3/2017	Jaeryoung Lee	Robotic tasks and capabilities revised
0.8	7/3/2017	Hiroko Kamide	4 Mrs Y scenario tables ready and circulated to partners
0.9	7/3/2017	Carmine Recchiuto	7 Mrs Y scenario tables revised and uploaded
0.10	9/3/2017	Alessandro Saffiotti	Robotic tasks and capabilities revised
0.11	9/3/2017	Irena Papadopoulos	3 Mrs C scenario tables added
0.12	10/3/2017	Edouard Lagrue	Robotic tasks and capabilities revised
0.13	10/3/2017	Chris Papadopoulos	Updated scenario tables
0.14	10/3/2017	Irena Papadopoulos/ Christina Koulouglioti	4 Mrs K scenario tables ready and circulated to partners
0.15	10/3/2017	Carmine Recchiuto	4 Mrs K scenario tables revised and uploaded
0.16	11/3/2017	Irena Papadopoulos	1 Mrs S scenario table added
0.17	12/3/2017	Hiroko Kamide	3 Mrs Y scenario tables added, 1 table revised
0.18	12/3/2017	Alessandro Saffiotti	Robotic tasks and capabilities revised
0.19	15/03/2017	Irena Papadopoulos	4 Mrs Y scenario tables edited
0.20	15/03/2017	Nak Young Chong	Robotic tasks and capabilities revised
1.0	17/03/2017	Irena Papadopoulos	Report and scenario tables ready
1.1	24/03/2017	Antonio Sgorbissa	Scenario tables ordered and graphical appearance updated. Comments to the report added.
1.2	28/03/2017	Irena Papadopoulos	Paragraphs added in the Methodology section about the role of diagrams
1.3	29/03/2017	Antonio Sgorbissa	Revision and diagrams updated
1.4	30/03/2017	Alessandro Saffiotti Antonio Sgorbissa	Section 4 expanded to clarify the procedure adopted for collaborative working. Scenario tables revised.
1.5	30/6/2018	Hiroko Kamide	Mr Yamada script and tables added; Mrs Yamada revised
1.6	1/6/2018	Irena Papadopoulos/ Christina Koulouglioti	Mr Chaterjee script and tables added; Mr Smith script and tables added; Mr Khan script and added.
1.7	4/6/2018	Antonio Sgorbissa	Table revised

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 60 scenarios based on 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 consortia in H2020 assistive robotics project.

Contents

1	Description of the deliverable	5
1.1	Purpose and contents of this deliverable	5
1.2	The structure of the deliverable	6
1.3	Why this deliverable is needed in the project.....	7
2	State-of-the-art and advancement beyond	7
3	Methodology	8
4	How this deliverable will be used	14
5	Conclusions	15
5.1	Compliance with the DoA and corrective actions	15
5.2	Achievements	15
5.3	Next steps	16
6	Bibliographic references	16
7	APPENDICES	17

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 scripts which we then used to prepare the detailed scenarios (see Appendix I). The scripts are: **Mrs Chaterjee** (an Indian Hindu woman), **Mrs Smith** (an English woman), **Mrs Yamada** (a Japanese woman), **Mr Chaterjee** (An Indian Hindu man), **Mr and Mrs Khan** (an Indian Muslim man and woman), **Mr Smith** (an English man) and **Mr Yamada** (a Japanese man). Although originally we had developed all female scripts in the belief that this would provide better control during the testing and evaluation stage, thus increasing the verification and validation of the results, we later developed the male scripts and scenarios in order to achieve the gender balance deemed to be important for the project .

Another important decision we took was to acknowledge the 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. We have also acknowledged the impact of education, income and acculturation by including relevant demographics and context in all the scripts which guided the development of scenarios. 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 60 detailed scenarios have been developed: Mrs Chaterjee (10), , Mrs Smith (8), Mrs Yamada (10), Mr and Mrs Khan (4) Mr Chaterjee (10), Mr Smith (8), Mr Yamada (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 Mr and Mrs Khan is smaller compared to other men and women: indeed, we have written ad-hoc scenarios for Mr and Mrs Khan only when cultural differences between the two Indian men and women are more relevant, whereas – in many cases - Mr and Mrs Chaterjee’s scenarios may be reused for Mr and Mrs Khan as well. Similarly, the reader can notice that the number of scenarios for Mr and Mrs Smith is lower, since information included in other scenarios may be re-used for Mr and Mrs Smith, and we chose to include only information that is culture-specific.

As planned in the DoA, the 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 men and 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 men and 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) were 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 providing surrogate ideas for the expansion of the robot's capabilities,

3 Methodology

All partners of the consortium, led by Middlesex University, have closely cooperated in 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) Populating the tool with 60 scenarios for the 4 cultural groups and the corresponding robot capabilities that may play a key role in each scenario;
- e) Critical review of the scenarios and contributions from the whole consortium, 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.

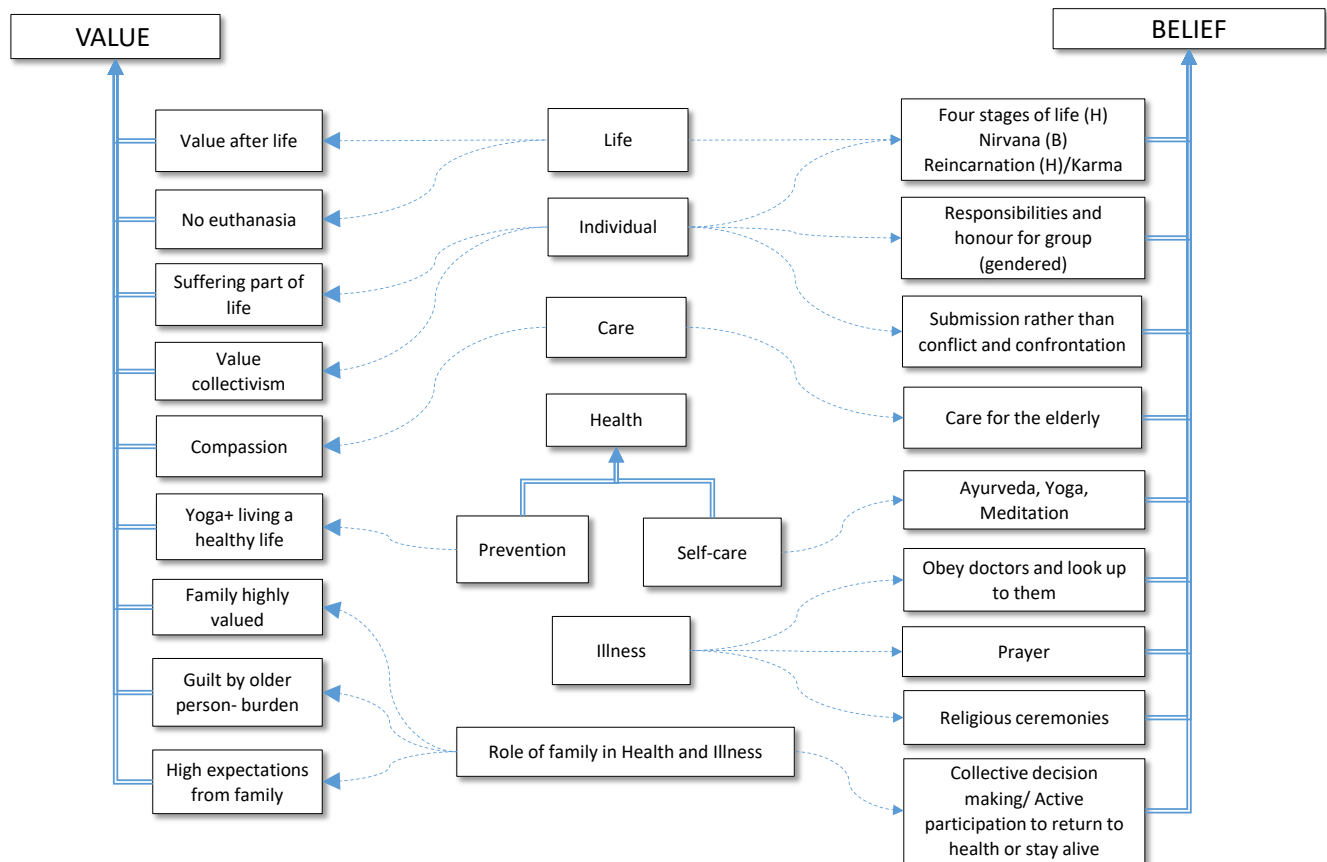


Diagram 1 Values and beliefs (Indian scenarios).

During the brainstorming (point b above) we used the Indian cultural group as the vehicle for this process. Specifically, we started by producing Diagrams 1, 2, 3, 4 to systematically represent concepts related to activities of an ordinary day of older men and 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.

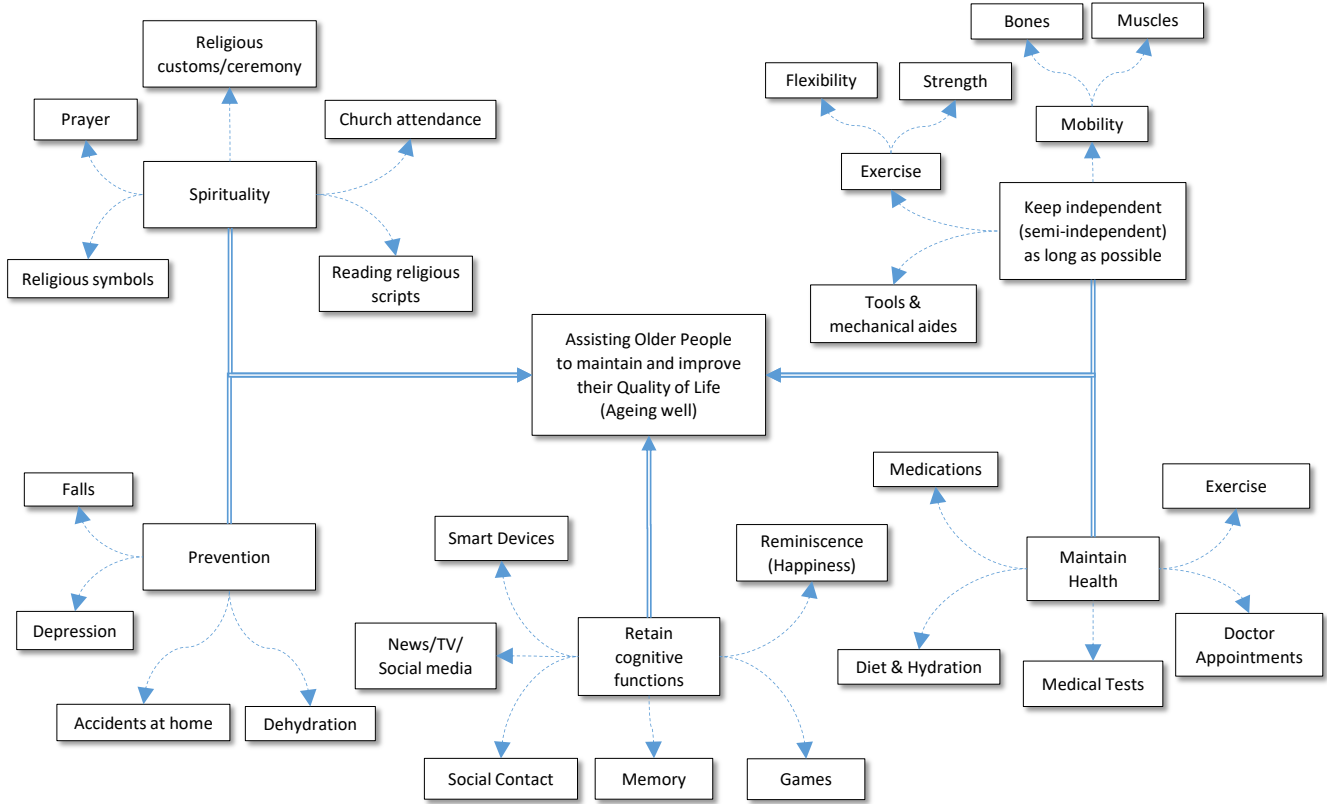


Diagram 2 Maintaining quality of life.

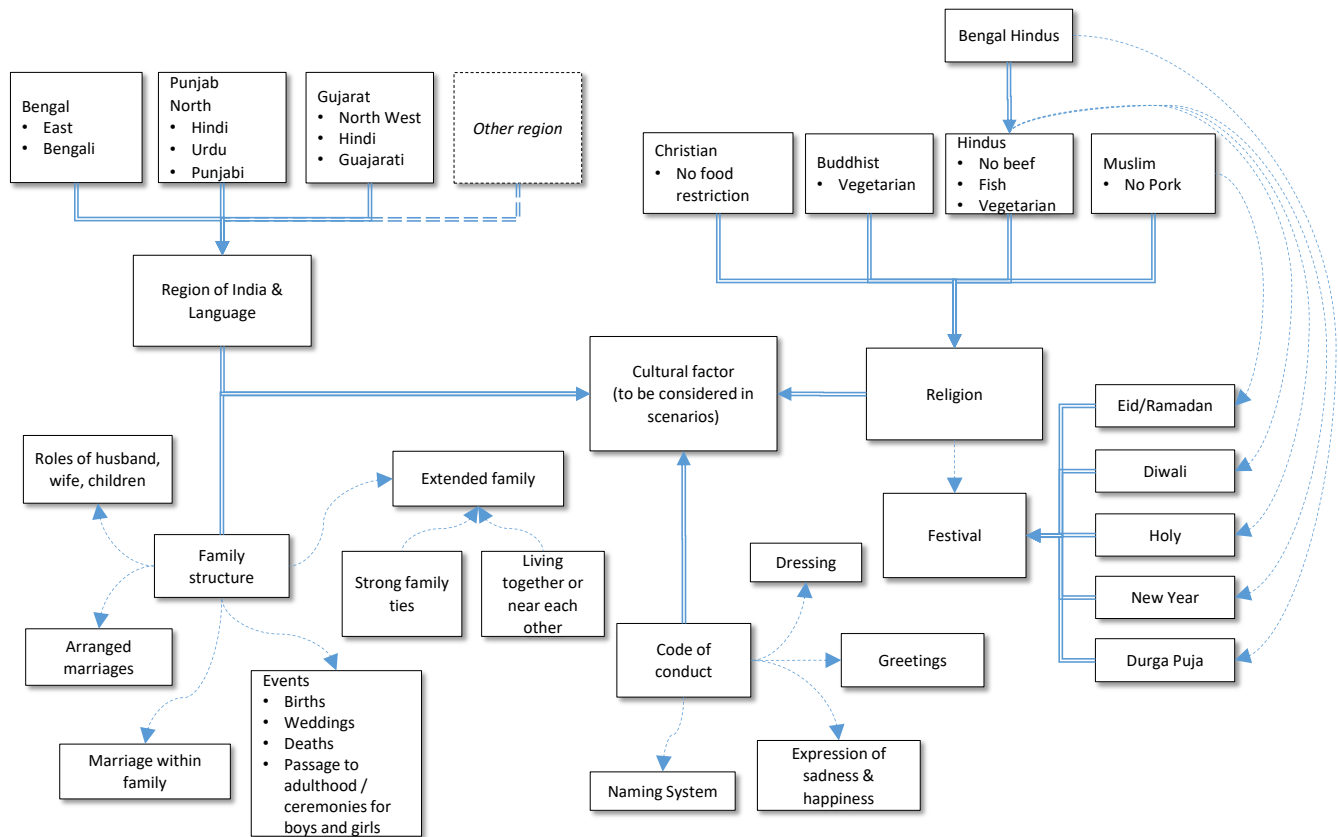


Diagram 3 Cultural factors to be considered (Indian scenarios).

Brainstorming proved to be a powerful method in aiding 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.

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.

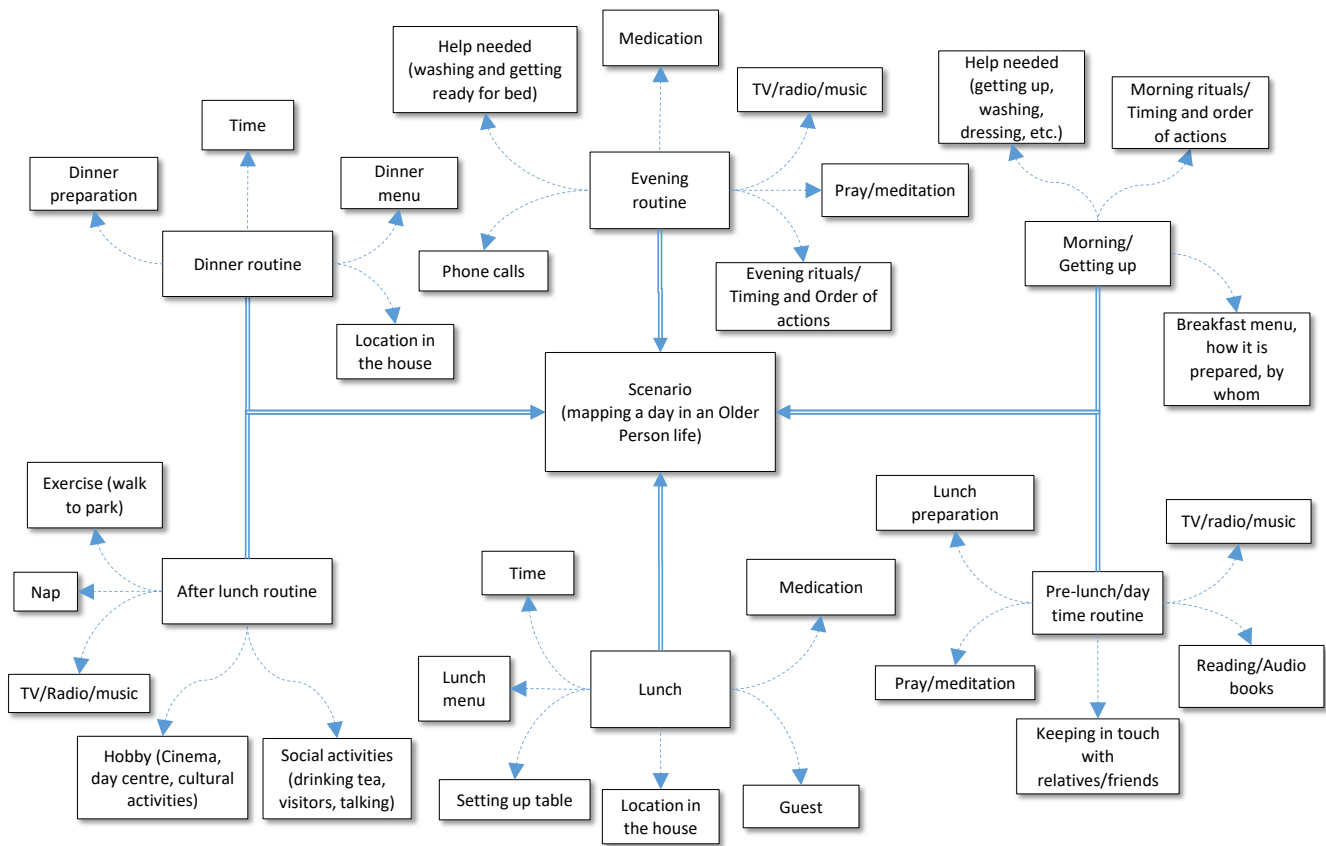


Diagram 4 Mapping a day of an elderly person living in an assistive care facility.

The procedure described in points c, d, e, and f (above), 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 consortia in H2020 socially assistive robotics project.

To this end, and under the leadership of Middlesex University that initiated the process by defining the real needs of older people, all partners participated to a number of dedicated video conference meetings from 1st February to 17th March (Figure 1). Video conferences 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.

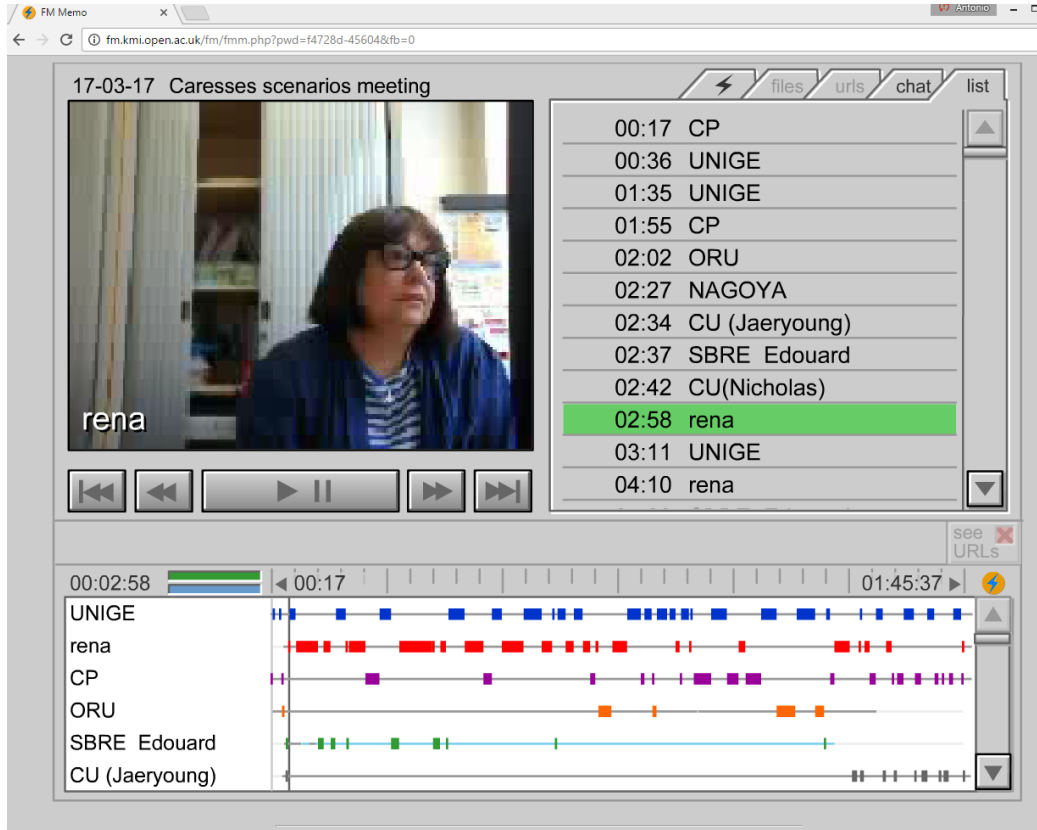


Figure 1 CARESSES partners discussing about scenarios: screenshot from the "FlashMeeting" of 17th March. The tool allows for recording video conferences, taking notes, etc.

Then the “Human section” of each table (orange part) has been filled by Middlesex University (Mr and Mrs Chaterjee, Mr and Mrs Smith, and Mr and Mrs Khan) and by Nagoya University (Mr and 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).

Each table was uploaded on a Google drive repository (Figure 2), to allow robotic partners to collaboratively 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).

ons Help Last edit was 3 minutes ago

E3. Gestures are gentle and not too exaggerated		Alternative Tasks
depending on culture (volume and tone of voice, distance, velocity, etc.)	<p>A1. Remind Mrs C that she is having family for lunch (P6,P7,V3)E</p> <p>A2. Recommend dishes (P6,V3,V5)E</p> <p>A3. Provide recipes (P6,V4)E</p> <p>A4. Walk with Mrs C as she goes through her cabinets and refrigerator (M6,M8,P1,P3,P4,V4,V5)H</p> <p>A5. Keep notes for Mrs C (P6) H</p> <p>A6. Locate things as needed (phone, phone book, food, dishes, kitchen tools,...) (M5,M8,P4,P5)H</p> <p>A7. Bring things when needed (phone, phone book, dishes, kitchen tools) (M2,M3,M5,M7,M8,P1,P4) H</p> <p>A8. Ask Mrs C if she needs any phone numbers (V1)E</p> <p>A9. Place a phone call, saying "please hold on" and then asking Mrs C to talk (P6,V7,V9) H</p> <p>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?)</p> <p>A11. Ask Mrs C if she is tired and suggest to have a rest for a while (P2,V1,V3)E</p> <p>A12. Ask Mrs C information about her favourite foods and food preparation (M9,V2,V5)E</p> <p>A13. Help with laying the table (M1,M2,M3,M5,M7,M8,P4,P5) H</p> <p>A14. Carry some food to the table on a tray (M1,M2,M4,M5,M7,M8,P4,P5) H</p>	<p>A5'. Locate and give Mrs C paper and pencil for taking notes (This does not seem feasible to me -- Another alternative for A4+A5: if the robot has provided the recipe (A3) then it knows the needed ingredients, so it can walk with Mrs C and ask (Y/N) if ingredient X is available, and make a list of the ones missing.)</p> <p>A6. Only feasible if objects are at fixed positions known to the robot.</p> <p>A7'. Indicate the position of needed objects (under above assumption)</p> <p>A9'. Turn with the screen close to Mrs C and place a Skypeout call to the shop.</p> <p>Remind Mrs C to call the grocery shop</p> <p>A13'. Suggest Mrs C how to lay the table (semi-H: ideally the robot should observe the action, and use terms like "to the right", both of which require advanced situation assessment)</p> <p>A14'. Suggest Mrs C. to prepare a tray with tea and sweets and to put it on the robot's arms (Still hard).</p>
Left: Robot motor capabilities required Right: Corresponding API or	<p>M1. Coordinately move base/ arms/ hands (A13,A14)</p> <p>M2. Grasp objects (A7,A13,A14)</p>	ALMotion

Chris Papadop... 5:01 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: "(This does not seem feasible to me -- Another alternative for A4+A5: if the robot has provided the r..."
From imported document

Edouard LAGR... 10:41 AM Mar 10
Robot need to learn the map in order to localize its position
From imported document

Carmine Recchiuto 10:42 AM Mar 10
Add: "H"
From imported document

Edouard LAGRUE 10:42 AM Mar 10
we can use a reminder, then free speech to keep note, more E than H for me

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 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 men and 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 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, and 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.

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 terms 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.

6 Bibliographic references

1. Hofstede, G. National cultural dimensions: <https://geert-hofstede.com/national-culture.html>
2. Papadopoulos, I. (2006). *Transcultural health and social care: development of culturally competent practitioners*. Churchill Livingstone Elsevier, Edinburgh.
3. BBC Religions: <http://www.bbc.co.uk/religion/religions/>
4. WHO Countries: <http://www.who.int/countries/en/>
5. Indian etiquette: <http://www.a-to-z-of-manners-and-etiquette.com/indian-etiquette.html>
6. Zubair, M., Martin, W., & Victor, C. (2012). Embodying gender, age, ethnicity and power in the 'field': reflections on dress and the presentation of the self in research with older Pakistani Muslims. *Sociological Research Online*, 17(3) 21. <http://www.socresonline.org.uk/17/3/21.html>
7. Ali, N. R. (2015). Exploring Older South Asian Migrant (SAM) Women's Experiences of Old Age and Ageing. Doctoral thesis, University of Huddersfield.
8. Zubair, M. & Norris, M. (2015). Perspectives on ageing, later life and ethnicity: ageing research in ethnic minority contexts. *Ageing & Society*, 35, 897-916.
9. Victor, C., Martin, W., & Zubair, M. (2011). Families and caring amongst older people in South Asian communities in the UK: a pilot study. *European Journal of Social Work*, 15(1), <http://dx.doi.org/10.1080/13691457.2011.573913>
10. BSI (2016). Robots and robotic devices. Guide to the ethical design and application of robots and robotic systems. BSI 8611.

11. Osborn A (2007). *Your creative power*. Myers Press. Florida.
12. Hall E. T. (1997). *Beyond Culture*. Anchor books. NY.

7 APPENDICES

Appendix I consists of seven scripts and sixty scenarios (please see the Summary below for more details).

APPENDIX I

Summary

- 1. MRS CHATERJEE – SCRIPT21
- 1.1 MRS CHATERJEE – MORNING ROUTINE, BREAKFAST26
- 1.2 MRS CHATERJEE – MORNING ROUTINE, DRESSING30
- 1.3 MRS CHATERJEE - PRE LUNCH ROUTINE, READING/AUDIO/TV/MUSIC35
- 1.4 MRS CHATERJEE - PRE LUNCH ROUTINE, PRAY39
- 1.5 MRS CHATERJEE - LUNCH ROUTINE, EATING.....44
- 1.6 MRS CHATERJEE - AFTER LUNCH ROUTINE, NAP AND MEDITATION48
- 1.7 MRS CHATERJEE - AFTER LUNCH ROUTINE, EXERCISE AND AFTERNOON TEA52
- 1.8 MRS CHATERJEE - AFTER LUNCH ROUTINE, SOCIAL ACTIVITIES (DRINKING TEA, VISITORS, TALKING)57
- 1.9 MRS CHATERJEE - AFTER LUNCH ROUTINE, SON, SOCIAL ACTIVITY62
- 1.10 MRS CHATERJEE - PREPARING FOR DINNER, DINNER PLANNING67
- 2. MR CHATERJEE – SCRIPT72
- 2.1 MR CHATERJEE – MORNING ROUTINE, BREAKFAST76
- 2.2 MR CHATERJEE – MORNING ROUTINE, DRESSING80
- 2.3 MR CHATERJEE - PRE LUNCH ROUTINE, READING/AUDIO/TV/MUSIC84
- 2.4 MR CHATERJEE - PRE LUNCH ROUTINE, PRAY88
- 2.5 MR CHATERJEE - LUNCH ROUTINE, EATING93
- 2.6 MR CHATERJEE - AFTER LUNCH ROUTINE, NAP AND MEDITATION97
- 2.7 MR CHATERJEE - AFTER LUNCH ROUTINE, EXERCISE AND AFTERNOON TEA101
- 2.8 MR CHATERJEE - AFTER LUNCH ROUTINE, SOCIAL ACTIVITIES (DRINKING TEA, VISITORS, TALKING)106
- 2.9 MR CHATERJEE - AFTER LUNCH ROUTINE, SON, SOCIAL ACTIVITY110
- 2.10 MR CHATERJEE - PREPARING FOR DINNER, DINNER PLANNING115

3. MRS SMITH - SCRIPT.....120

3.1 MRS SMITH – MORNING ROUTINE, BREAKFAST123

3.2 MRS SMITH - MORNING ROUTINE, DRESSING128

3.3 MRS SMITH – PRE LUNCH ROUTINE, PRAY.....132

3.4 MRS SMITH – LUNCH ROUTINE, SON, SOCIAL ACTIVITY135

3.5 MRS SMITH - AFTER LUNCH ROUTINE, NAP140

3.6 MRS SMITH - AFTER LUNCH ROUTINE, SOCIAL ACTIVITIES (DRINKING TEA, VISITORS, TALKING).....144

3.7 MRS SMITH – PREPARING FOR DINNER, DINNER149

3.8 MRS SMITH - AFTER DINNER ROUTINE, READING/AUDIO/TV/MUSIC.....152

4. MR SMITH - SCRIPT.....156

4.1 MR SMITH – MORNING ROUTINE, BREAKFAST158

4.2 MR SMITH - MORNING ROUTINE, DRESSING163

4.3 MR SMITH – PRE LUNCH ROUTINE, PRAY167

4.4 MR SMITH – LUNCH ROUTINE, SON, SOCIAL ACTIVITY170

4.5 MR SMITH - AFTER LUNCH ROUTINE, NAP175

4.6 MR SMITH - AFTER LUNCH ROUTINE, SOCIAL ACTIVITIES (DRINKING TEA, VISITORS, TALKING)179

4.7 MR SMITH – PREPARING FOR DINNER, DINNER184

4.8 MR SMITH - AFTER DINNER ROUTINE, READING/AUDIO/TV/MUSIC187

5. MRS YAMADA – SCRIPT191

5.1 MRS YAMADA – MORNING ROUTINE, BREAKFAST196

5.2 MRS YAMADA – MORNING ROUTINE, DRESSING200

5.3 MRS YAMADA - PRE LUNCH ROUTINE, READING/AUDIO/TV/MUSIC203

5.4 MRS YAMADA - PRE LUNCH ROUTINE, PRAY207

5.5 MRS YAMADA - LUNCH ROUTINE, EATING211

5.6 MRS YAMADA - AFTER LUNCH ROUTINE, NAP, RECREATION AND MEDITATION.....215

5.7 MRS YAMADA - AFTER LUNCH ROUTINE, EXERCISE AND AFTERNOON TEA219

5.8 MRS YAMADA - AFTER LUNCH ROUTINE, SOCIAL ACTIVITIES (DRINKING TEA, VISITORS, TALKING).....223

5.9 MRS YAMADA - AFTER LUNCH ROUTINE, SON’S FAMILY, SOCIAL ACTIVITY227

5.10 MRS YAMADA - PREPARING FOR DINNER, DINNER PLANNING.....232

6. MR YAMADA – SCRIPT236

6.1 MR YAMADA – MORNING ROUTINE, BREAKFAST241

6.2 MR YAMADA – MORNING ROUTINE, DRESSING245

6.3 MR YAMADA - PRE LUNCH ROUTINE, READING/AUDIO/TV/MUSIC248

6.4 MR YAMADA - PRE LUNCH ROUTINE, PRAY252

6.5 MR YAMADA - LUNCH ROUTINE, EATING256

6.6 MR YAMADA - AFTER LUNCH ROUTINE, NAP, RECREATION AND MEDITATION260

6.7 MR YAMADA - AFTER LUNCH ROUTINE, EXERCISE AND AFTERNOON TEA264

6.8 MR YAMADA - AFTER LUNCH ROUTINE, SOCIAL ACTIVITIES (DRINKING TEA, VISITORS, TALKING)268

6.9 MR YAMADA - AFTER LUNCH ROUTINE, SON’S FAMILY, SOCIAL ACTIVITY272

6.10 MR YAMADA - PREPARING FOR DINNER, DINNER PLANNING277

7. MR AND MRS KHAN – SCRIPT281

7.1 MR AND MRS KHAN - MORNING ROUTINE, DRESSING284

7.2 MR AND MRS KHAN- AFTER LUNCH ROUTINE, SOCIAL ACTIVITIES (DRINKING TEA, VISITORS, TALKING).....288

7.3 MR AND MRS KHAN - PREPARING FOR DINNER, DINNER PLANNING292

7.4 MR AND MRS KHAN - EVENING ROUTINE, PRAY297

1. MRS CHATERJEE – SCRIPT

Mrs Sonali Chaterjee 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 married¹ and immigrated to the UK. Mrs Chaterjee² is a Bengali *Brahmin*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 medication⁴. She also believes in homeopathy therefore she is also taking regularly some ayuverda drops⁵ 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.

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 cooking⁷ 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 feet⁸ but she couldn't see her and almost knocked her over. She was very sad about

1. *She had an arranged marriage*

2. *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*

3. *Brahmins belong in the high cast*

4. *Respect to western medicine*

5. *Ayurveda is a system of medicine with roots in the India subcontinent*

6. *Retinitis pigmentosa is a genetic disease that affects the eyes. This is a progressive disease for which unfortunately there is no cure*

7. *Common to have more than one helpers among middle class families*

8. *Respectful way to greet an elderly loved one*

9. *Putting ginger in tea is believed to relief cold symptoms*

10. *Similarly with chewing cloves, especially when you have a sore throat.*

11. *Visitors are welcome and need to be treated nicely, offering a snack or tea or coffee.*

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*

that.

Today she 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 ginger⁹. She also asks for some cloves to chew¹⁰, they are good for the sore throat. Her good friend, Lila, comes over. She is still in her nightdress and robe but insists that she comes in. She needs to come in and have at least a cup of tea.^{11,12}

She goes in and gets dressed quickly. They start chatting in Bengali¹³. Her friend looks at her and comments on how beautiful she looks in her shawl¹⁴. She is cold; she needs something over her shoulders. She asks her carer to bring out some snacks and sweets¹⁵. She also asks her to make sweet masala tea¹⁶, 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 marriage¹⁷.

After her friend leaves she goes to her bedroom to properly dress up. She has a beautiful selection of saris (silk, cottons and from different parts of India) but after her husband died she only wears plain ones (predominantly white with a colour border)¹⁸. She chooses one that her daughter bought her the last time¹⁹ they went shopping together. She could also wear a pair of trousers and a blouse, or a salwar kameez²⁰ 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 that her husband presented her on a wedding anniversary. She has a large selection of jewellery 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 jewellery to her daughter and daughter in law but she is keeping the rest for her grandchildren²¹.

She will comb her hair nicely and just keep her stab earrings and two plain bangles in each hand²². She remembered dressing up.... She would choose a beautiful colourful sari, she would put on a short and long necklace, a bindi²³ and her sindur²⁴, and then of course make up and her favourite perfume. She does not do a lot of all that any more but at least she continues to colour her hair which she does not keep very long²⁵. She used

14. Big scarf, if winter possibly woollen

15. Products purchased from a local Indian shop

16 Indian way of making tea... boil water, milk, some species and tea leaves

17. Role of astrology

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

20. Salwar kameezs are worn mostly by Muslim ladies but Hindus also chose to wear especially younger because they are easier to wear and comfortable.

21. Importance of gold, for her security but also for the following generations... passing it on...

22. Iron bangles usually the symbol of marriage that she cannot take it off. In other parts of India a necklace with black and gold beads is the symbol instead of a wedding ring.

23. Forehead decorations that all women can wear.

24. Red powder spread at forehead but only for married

to colour her hair herself but now she needs to call a hairdresser/beautician²⁶ home every 6-8 weeks.

After dressing Mrs C will light a scented stick to Lord Ganesha²⁷ and pray for the removal of obstacles and health for all her family/friends²⁸. In the corner of her bedroom, she has a small table with a couple of small statues of Ganesha, Shiva and Durga²⁹

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'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 (using a tea bag) not the Indian way³². 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 BBC or the Bengali channel, or the Indian TV³³ 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.

After her husband died and because of her health problems (thyroid and high cholesterol) she has a light lunch. Usually dhal³⁴ and fish curry³⁵. She has prepared enough dhal and fish curry for lunch and dinner and has kept them in two containers. Instead of bhat³⁶ she will make two chapatis³⁷ 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 cook the chapatis without using any oil.³⁸

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.

After her light lunch now she is sitting comfortably in her armchair in the

women.

25. Long hair a symbol of beauty and youth.

26. 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 for less money.

27. The 'elephant' God the patron of art and sciences and the removal of obstacles

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

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.

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.

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.

36. Rice (basmati)

37. Round bread made of flour and cooked on the fire.

38. Containers, rolling pins, etc are brought from India

39. Common way of eating. Indians actually say that you cannot enjoy the food if you don't eat with your hand.

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 meditates⁴⁰ 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.

After her nice walk, it is time for some tea. She takes the time to make a nice cup of tea⁴¹. She likes to have her tea with some tea biscuits or cake⁴² brought by her son in his last visit.

It is late afternoon now and her son just popped in to visit.

He calls her 'Ma'⁴³, bends to touch her feet, she touches his head, and they hug⁴⁴. He takes off his shoes⁴⁵, leaves them close to the door and they go in. They sit on the sofa close together. They start talking about his day. She asks 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.

She asks him when he will visit her again and he reminds her that next week is Diwali⁴⁶ 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.

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 curry⁴⁷. 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

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 Gujarati'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 couple of cloves, some sugar, milk and tea leaves. She lets it boil and then closes the heat and lets it brew.

42. Fruit cake, made with different dried fruits and almonds.

43. Ways of calling mother: Ma or Ama or Ai, or Mata (depending on language)

44. Greetings

45. Entering the house

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 year around, is full of bones but especially loved.

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 rasgulla⁴⁸.

The carers used to call her Mrs Chaterjee when she first moved in the care home, but now they call her Mashi⁴⁹, a respectful way to address older Hindu women.

48. *Typical Bengali sweets*



49. *Auntie*

1.1 MRS CHATERJEE – MORNING ROUTINE, BREAKFAST


Scenario name	Mrs Chaterjee – Morning routine, Breakfast	
Time of the day	Morning	
General Description	<p><...> 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.</p> <p>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</p>	<p>1. <i>It is not uncommon to have some leftover food for breakfast</i></p> <p>2. <i>Common foods for breakfast (tea, toast, cereal/porridge, boiled eggs, fried/grilled bacon, sausage, baked beans, tomatoes.)</i></p>
Functional areas of the house involved	F1. Kitchen	
Relevant objects involved	<p>O1. Plates/glasses</p> <p>O2. Cup</p> <p>O3. Cutlery</p> <p>O4. Tea, biscuits and other foods/drinks</p> <p>O5. Table</p> <p>O6. Chair</p> <p>O7. Radio/TV</p>	
Relevant persons (in addition to user and caregiver)	B1. No-one	
What a human (formal or informal) caregiver shall / can do in this scenario	<p>H1. Say Good morning and ask how she is doing</p> <p>H2. Ask what Mrs C would like for breakfast</p> <p>H3. Recommend different options</p> <p>H4. Get all the ingredients for making breakfast</p> <p>H5. Use the appropriate plates/glasses /utensils</p> <p>H6. Cook breakfast/ warm last night's curry</p> <p>H7. Serve breakfast</p> <p>H8. Ask whether she would like to have tea or coffee or juice</p>	

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

	<p>(M7,M8,V4) [H->E]</p> <p>A10. Keep company to Mrs C while eating (P3,P8,V1,V2,V4) [E]</p> <p>A11. Comment on her dietary choices (M9,P3,P7,V4,V6) [H]</p> <p>A12. Inform Mrs C if she has any text /telephone messages and reads them to her (M8,P7,V7) [E]</p>	<p>the news. If yes, connect to her favorite (known a priori) internet radio channel.</p> <p>A9''. Ask Mrs C if she wants to hear radio and the type of music. Then, reproduce the selected radio channel</p> <p>A11'. Provide general dietary advices</p> <p>A12'. Check email or events from apps such as Whatsapp / Viber</p>
<p>Left: Robot motor capabilities required</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>M1. Grasp objects (A5,A6,A7)</p> <p>M2. Carry lightweight items (A5,A6,A7)</p> <p>M3. Carry heavyweight items (A7)</p> <p>M4. Navigate autonomously in the house (A4,A7)</p> <p>M5. Reach a target / person (A1,A5,A7)</p> <p>M6. Avoid unexpected static or moving obstacles / persons (A4,A5,A7)</p> <p>M7. Turn on radio / TV /cassette player (A9)</p> <p>M8. Operate appliance (by communicating with smart environment) (A9,A12)</p> <p>M9. Show feelings (A1,A11)</p>	<ul style="list-style-type: none"> - no dedicated module, it could be achieved with external libraries - feasible if payload is <300 g - not feasible - ALNavigation - ALVisionRecognition, ALCloseObjectDetection, ALNavigation - ALMotion - ALAudioPlayer <p>For external devices, It could be achieved with a specific communication protocol</p> <ul style="list-style-type: none"> - It could be achieved with a specific communication protocol - ALLeds, ALRobotPosture, ALAnimationPlayer
<p>Left: Robot perceptual capabilities required</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>P1. Locate persons (distance and position) (A1,A5,A7)</p> <p>P2. Recognize emotions (A1)</p> <p>P3. Recognize actions (A10,A11)</p> <p>P4. Recognize persons / faces (A1)</p> <p>P5. Recognize obstacles / uneven ground (A4,A5,A7)</p> <p>P6. Recognize/ Locate items (A4,A6,A7)</p> <p>P7. Retrieve / store information (A2,A8,A11,A12)</p>	<ul style="list-style-type: none"> - ALPeoplePerception - ALMood - no dedicated module, it could be achieved with external libraries - ALFaceDetection - ALLaser, ALSonar - ALVisionRecognition - ALMemory

	<p>P8. Recognize dialogue context (A10)</p> <p>P9. Keep track of time (A8)</p>	<ul style="list-style-type: none"> - ALSpeechRecognition - no dedicated module, it could be achieved with different solutions
<p>Left: Robot verbal capabilities involved</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>V1. Ask Yes/ No questions (A10)</p> <p>V2. Ask multiple choice questions (A1,A10)</p> <p>V3. Suggest / remind (A2,A8)</p> <p>V4. Context dependent chat (A3,A9,A10,A11)</p> <p>V5. Greet (A1)</p> <p>V6. Encourage/ praise (A3,A11)</p> <p>V7. Report information (A2,A12)</p>	<ul style="list-style-type: none"> - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech - ALDialog, ALTextToSpeech, ALTabletService - ALMemory, ALTextToSpeech, ALTabletService
<p>Which “qualitative” robot behavior is expected to be culturally dependent</p>	<p>R1. Polite way of asking and interacting</p> <p>R2. Waits for her instructions</p> <p>R3. Awareness of Mrs C eating preferences</p> <p>R4. Awareness of where Mrs C likes to take her breakfast</p> <p>R5. Preferences of news/radio channels</p>	
<p>Which behavior is “quantitatively” different depending con culture (volume and tone of voice, distance, velocity, etc)</p>	<p>T1. Speaks with soft tone</p> <p>T2. Speaks in low volume</p> <p>T3. Walks in low speed</p>	

1.2 MRS CHATERJEE – MORNING ROUTINE, DRESSING

Scenario name	Mrs Chaterjee – Morning routine, Dressing	
Time of the day	Morning	
General Description	<p><...> 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 time² they went shopping together. She could also wear a pair of trousers and a blouse, or a salwar kamchim³ 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 grandchildren⁴.</p> <p>She will comb her hair nicely and just keep her stab earrings and two plain bangles in each hand⁵. She remembered dressing up.... She would choose a beautiful colourful sari, she would put on a short and long necklace, a bindi⁶ and her sindur⁷, 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 which she does not keep very long⁸. She used to colour her hair herself but now she needs to call a hairdresser/beautician⁹ home, every 6-8 weeks. <...></p>	<p>1. dresses and different ways of dressing. In addition, ways of dressing if you are mourning or widow (old widow, younger etc)</p>  <p>2. way of showing her love and how important her children are to her</p> <p>3. salwar are worn mostly by Muslim ladies but Hindus also chose to wear especially younger people because they are easier to wear and comfortable.</p> <p>4. importance of gold, for her safety but also for the following generations... passing it on...</p> <p>5. 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 beads is the symbol of marriage instead of an iron bangle.</p> <p>6. forehead decorations that all women can wear.</p> <p>7. red powder spread at forehead but only for</p>

		<p><i>married women.</i></p> <p><i>8. long hair a symbol of beauty and youth...</i></p> <p><i>9. 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</i></p>
Functional areas of the house involved	<p>F1. Bedroom - Bed</p> <p>F2. Bedroom – Wardrobe</p> <p>F3. Bedroom – Drawers</p> <p>F4. Bedroom - dressing table</p>	
Relevant objects involved	<p>O1. Saris, blouses, petticoats, shawls</p> <p>O2. Jewels (necklaces and bangles)</p> <p>O3. Head colours, and bindis of different shapes and colours that are put as decorations on the forehead (usually round & red)</p> <p>O4. Perfume</p> <p>O5. Comb</p> <p>O6. Make up</p>	
Relevant persons (in addition to user and caregiver)	<p>B1. No-one</p>	
What a human (formal or informal) caregiver shall / can do in this scenario	<p>H1. Help Mrs C to wear her sari, if she needs help (e.g., by holding, handing, and fastening)</p> <p>H2. Praise Mrs C for her look and beautiful saris</p> <p>H3. Suggesting to wear jewels or to take some perfume, making statements about favourite colours, family, hobbies, traditions of India...</p> <p>H4. Help Mrs C to choose sari</p> <p>H5. Help her find the sari's matching blouse and matching petticoat (underskirt)</p> <p>H6. Bring comb</p> <p>H7. Reminder her to call the hairdresser to make an appointment</p> <p>H8. Recommend to wear a shawl (colour and type)</p>	
Cultural knowledge involved (top level concepts in the Cultural Knowledge hierarchy)	<p>C1. Hindu morning routine</p> <p>C2. Hindu dressing and accessories</p>	
Which “qualitative”	<p>D1. Distance kept by caregiver from Mrs C is a parameter that depends on culture</p>	

caregiver behavior is expected to be culturally dependent	<p>D2. The way of praising depends on culture and current emotion</p> <p>D3. Holding pieces of clothes or jewellery is an action to be executed only for cultures where dressing requires many “accessories”</p> <p>D4. Dressing is very important in Hindu culture; the time devoted to this activity will be longer than in other culture</p> <p>D5. Dresses, jewels, perfume and so on have different names in different cultures</p> <p>D6. Remember her favourite sari and colour and which saris were presents from her children</p>	
Which behavior is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc.)	<p>E1. Polite and soft tone of voice</p> <p>E2. Gentle reminder about the hairdresser</p> <p>E3. Not rushing Mrs C</p>	
<p>Left: What the robot shall / can do in this scenario</p> <p>Right: Alternative tasks</p>	<p>A1. Locate objects if needed (sari, box jewels, comb, shawl) (M5,M8,P5,P6) [H]</p> <p>A2. Bring objects if needed (sari, box jewels, comb, shawl) (M2,M3,M4,M5,M6,M8,P1,P5) [H]</p> <p>A3. Recommend sari and shawl (P4,P7,V1,V2,V3) [E]</p> <p>A4. Open wardrobe with saris/clothes (M1,M2,M6,M7,M8,M9,P5,P6) [H]</p> <p>A5. Ask Mrs C if she needs help while getting dressed (P2,P4,V1,V4) [E]</p> <p>A6. Help Mrs C to wear her sari, by holding it (M1,M2,M3,M6,M8,P1,P2,P5,P6) [E/H]</p> <p>A7. Switch on/off lights when asked (M10) [H]</p> <p>A8. Provide privacy to Mrs C (M5,P4) [E]</p> <p>A9. Show interest and ask information about Hindu traditional dresses (M11,P7,V1,V2,V4) [E]</p> <p>A10. Make recommendations (jewels,perfume,traditions of India, weather information) (P7,P8,V3,V4,V5) [E]</p> <p>A11. Praise Mrs C for her look (M11,P3,V4,V5) [E]</p> <p>A12. Remind Mrs C to call the hairdresser (P7,V3,V4) [E]</p>	<p>A1'+A2'. Tell Mrs C the location of the needed objects, knowing their positions in the environment, or by using markers</p> <p>A2''. Permanently attach a tray to the robot's chest to bring objects</p> <p>A4'+A6'. Bring a hanger (on wheels) close to Mrs C, and then bring it back to its place again.</p> <p>A4''. Open the wardrobe, by controlling its sliding doors in the smart environment</p> <p>A7'. Connect to automatic controls of lights.</p> <p>A10'. Talk with Mrs C, asking questions related to the context and making appropriate recommendations</p>
<p>Left: Robot motor capabilities required</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>M1. Coordinate move base/ arms/ hands (A4,A6)</p> <p>M2. Grasp objects (A2,A4,A6)</p> <p>M3. Carry lightweight items (A2,A6)</p>	<p>- ALMotion</p> <p>- no dedicated module, it could be achieved with external libraries</p> <p>- feasible if payload is <300 g</p>

	<p>M4. Carry heavyweight items (A2)</p> <p>M5. Navigate autonomously in the house (A1,A2,A8)</p> <p>M6. Reach a target / person (A2,A4,A6)</p> <p>M7. Pull objects (A4)</p> <p>M8. Avoid unexpected static or moving obstacles / persons (A1,A2,A4,A6)</p> <p>M9. Open doors / windows (by communicating with smart environment) (A4)</p> <p>M10. Operate appliance (by communicating with smart environment) (A7)</p> <p>M11. Show feelings (A9,A11)</p>	<ul style="list-style-type: none"> - not feasible - ALNavigation - ALVisionRecognition, ALCloseObjectDetection, ALNavigation - no dedicated module, it could be achieved with external libraries - ALMotion - It could be achieved with a specific communication protocol - It could be achieved with a specific communication protocol - ALLeds, ALRobotPosture, ALAnimationPlayer
<p>Left: Robot perceptual capabilities required</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>P1. Locate persons (distance and position) (A2,A6)</p> <p>P2. Recognize posture, gesture, movements (A5,A6)</p> <p>P3. Recognize emotions (A11)</p> <p>P4. Recognize actions (A3,A5,A8)</p> <p>P5. Recognize obstacles / uneven ground (A1,A2,A4,A6)</p> <p>P6. Recognize/ Locate items (A1,A4,A6)</p> <p>P7. Retrieve / store information (A3,A9,A10,A12)</p> <p>P8. Recognize weather/ temperature (A10)</p>	<ul style="list-style-type: none"> - ALPeoplePerception - no dedicated module, it could be achieved with external libraries - ALMood - no dedicated module, it could be achieved with external libraries - ALLaser, ALSonar - ALVisionRecognition - ALMemory - no dedicated module, it could be checked the broadcast on internet or by communicating with the smart environment
<p>Left: Robot verbal capabilities involved</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>V1. Ask Yes/ No questions (A3,A5,A9)</p> <p>V2. Ask multiple choice questions (A3,A9)</p> <p>V3. Suggest / remind (A3,A10,A12)</p> <p>V4. Context dependent chat (A5,A9,A10,A11,A12)</p>	<ul style="list-style-type: none"> - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService

	V5. Encourage/ praise (A10,A11)	- ALDialog, ALTextToSpeech, ALTabletService
Which “qualitative” robot behavior is expected to be culturally dependent	R1. Way of dressing R2. Type of clothes depending for the occasion R3. May need to turn to face the wall or leave the room when Mrs C is changing R4. Provide privacy	
Which behavior is “quantitatively” different depending con culture (volume and tone of voice, distance, velocity, etc)	T1. Speaks with soft tone T2. Speaks in low volume T3. Walks in low speed T4. Stands not too close to Mrs C unless helping her with something 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	<p><...> 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 way¹. 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 TV² 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.</p>	<ol style="list-style-type: none"> 1. <i>The Indian way of making tea is to boil tealeaves with spices such as cinnamon, clove, cardamom, with added sweetened milk</i> 2. <i>Indian TV channels /radio</i>
Functional areas of the house involved	<p>F1. kitchen F2. Bedroom or living room (depending where is the radio or TV and her chair)</p>	
Relevant objects involved	<p>O1. TV O2. Radio O3. Talking/audio book O4. Remote O5. Phone O6. Armchair O7. Tea bags O8. Tea cup O9. Kettle</p>	
Relevant persons (in addition to user and caregiver)	<p>P1. No-one</p>	
What a human (formal or informal) caregiver shall / can do in this scenario	<p>H1. Help her switch on the radio or TV and find the correct channel (channel of her choice) H2. Read to her or if she is having an audio book start it from where she left off. H4. Bring her phone H5. Reminder her to call or call family member H6. Carry her tea cup in the living room</p>	
Cultural knowledge	<p>C1. Appreciate the importance of Indian music and Indian TV programmes.</p>	

involved (top level concepts in the Cultural Knowledge hierarchy)	C2. Understand the importance of keeping in regular contact with her family.	
Which “qualitative” caregiver behavior is expected to be culturally dependent	D1. Asking politely if she will need help with any of the activities (starting the TV or the radio, finding the channel) D2. Reminding her politely to call her daughter D3. Bring items and offering them gently D4. Privacy when talking with family	
Which behavior is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc.)	E1. Polite and soft tone of voice E2. Move slowly and gently in the house	
Left: What the robot shall / can do in this scenario Right: Alternative tasks	A1. Ask Mrs C how she feels and if she wants a cup of tea (P1,P2,P4,P7,V1,V2) [E] A2. Remind Mrs C that her TV show is on (P7,P8,V3,V7) [E] A3. Switch on/off TV/radio and put the correct channel/volume (M7,M8) [H] A4. Locate objects as needed (remote, tea bags, cup, phone) (M4,M6,P5,P6) [H] A5. Bring objects as needed (remote, tea bags, cup, phone) (M1,M2,M4,M5,M6,P1,P5) [H] A6. Prepare a tray with tea cup (M1,M2,P6) [H] A7. Bring the tray to Mrs C (M1,M3,M4,M5,M6,P1,P5,P6) [H] A8. Read Mrs C her audiobook (M9,V3,V5) [E] A9. Comment about how enjoying is reading and ask Mrs C to choose her next book from the catalogue (M9,P2,P7,V4,V6,V7) [E] A10. Remind Mrs C to call her daughter (P3,P7,V3,V6) [E] A11. Ask Mrs C if she wants to use skype/faceime instead (V2,V3) [E] A12. Place a skype/phone call, saying “please hold on” and then asking Mrs C to talk (M8,P7,V4,V6,V8) [E]	A3'. Connect to internet radio and let Mrs C listen to her favorite radio program via the Pepper’s loudspeakers. A3''. Connect to internet radio TV and let Mrs C watch her favorite TV program via the Pepper’s screen. A3'''. Connect to internet newspaper, and read the titles to Mrs C. After each title, ask Mrs C if she wants to hear the full story. A4'+A5'. Tell Mrs C the positions of needed objects in the environment, knowing them a priori, or detecting them by using markers. A6'+A7'. Locate and indicate objects needed for preparing the tray, knowing their position in the environment, or using markers. Then suggest Mrs C to bring the tray with food to the table A5''+A6''+A7''. Permanently attach a

		tray to the robot's chest to bring objects
Left: Robot motor capabilities required Right: Corresponding Pepper API (if any)	<p>M1. Grasp objects (A5,A6,A7)</p> <p>M2. Carry lightweight items (A5,A6)</p> <p>M3. Carry heavyweight items (A7)</p> <p>M4. Navigate autonomously in the house (A4,A5,A7)</p> <p>M5. Reach a target / person (A5,A7)</p> <p>M6. Avoid unexpected static or moving obstacles / persons (A4,A5,A7)</p> <p>M7. Turn on radio / TV /cassette player (A3)</p> <p>M8. Operate appliance (by communicating with smart environment) (A3,A12)</p> <p>M9. Show feelings (A8,A9)</p>	<ul style="list-style-type: none"> - no dedicated module, it could be achieved with external libraries - feasible if payload is <300 g - not feasible - ALNavigation - ALVisionRecognition, ALCloseObjectDetection, ALNavigation - ALMotion - ALAudioPlayer For external devices, It could be achieved with a specific communication protocol - It could be achieved with a specific communication protocol - ALLeds, ALRobotPosture, ALAnimationPlayer
Left: Robot perceptual capabilities required Right: Corresponding Pepper API (if any)	<p>P1. Locate persons (distance and position) (A1,A5,A7)</p> <p>P2. Recognize emotions (A1,A9)</p> <p>P3. Recognize actions (A10)</p> <p>P4. Recognize persons / faces (A1)</p> <p>P5. Recognize obstacles / uneven ground (A4,A5,A7)</p> <p>P6. Recognize/ Locate items (A4,A6,A7)</p> <p>P7. Retrieve / store information (A1,A2,A9,A10,A12)</p> <p>P8. Keep track of time (A2)</p>	<ul style="list-style-type: none"> - ALPeoplePerception - ALMood - no dedicated module, it could be achieved with external libraries - ALFaceDetection - ALLaser, ALSonar - ALVisionRecognition - ALMemory - no dedicated module, it could be achieved with different solutions
Left: Robot verbal capabilities involved Right: Corresponding Pepper API (if any)	<p>V1. Ask Yes/ No questions (A1)</p> <p>V2. Ask multiple choice questions (A1,A11)</p> <p>V3. Suggest / remind (A2,A8,A10,A11)</p>	<ul style="list-style-type: none"> - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech,

	<p>V4. Context dependent chat (A9,A12)</p> <p>V5. Read audiobook (A8)</p> <p>V6. Encourage/ praise (A9,A10,A12)</p> <p>V7. Report information (A2,A9)</p> <p>V8. Place a phone call (A12)</p>	<p>ALTabletService</p> <ul style="list-style-type: none"> - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALTextToSpeech, ALAudioPlayer - ALDialog, ALTextToSpeech, ALTabletService - ALMemory, ALTextToSpeech, ALTabletService - ALTabletService, or it could be achieved with a specific communication protocol
<p>Which “qualitative” robot behavior is expected to be culturally dependent</p>	<p>R1. Privacy when talking with family</p> <p>R2. Reminding her politely to call her daughter</p>	
<p>Which behavior is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc)</p>	<p>T1. Speaks with soft tone</p> <p>T2. Speaks in low volume</p> <p>T3. Walks in low speed</p> <p>T4. Stands not too close to Mrs C</p> <p>T5. Read at a steady pace</p>	

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	<p><...> After dressing Mrs C will light a scented stick to Lord Ganesha¹ 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 Durga²</p> <p>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.</p> <p>She may also want to pray for blessings for family members and close friends - birthdays/wedding anniversaries/death anniversaries etc</p>	<p>1. The 'elephant' God the patron of art and sciences and the removal of obstacles</p> <p>2. 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.</p> <p>3. '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.</p> <p>4. 'Puja' An offering to Gods made during prayer</p>
Functional areas of the house involved	F1. bedroom	
Relevant objects involved	<p>O1. Small table with statues</p> <p>O2. Scented sticks</p> <p>O3. Matches</p> <p>O4. Special scented stick holder</p> <p>O5. Small tray</p> <p>O6. Little brass bell</p> <p>O7. Small candle holder</p>	
Relevant persons (in addition to user and caregiver)	B1. No-one	
What a human (formal or informal) caregiver shall /	<p>H1. Possibly assist with lighting the scented stick and getting them if kept in different room?</p> <p>H2. Assist with sitting on the floor and getting up</p>	

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

	<p>the room (V1,V2) [E]</p> <p>A5. If in the room, provide privacy, observing Mrs C quietly during prayer (M4,M5,P4) [E]</p> <p>A6. Assist Mrs C to stand or sit (M3,M6,P1,P2,P4) [H]</p> <p>A7. Locate things as needed (scented stick holder, box of scented sticks, matches) (M4,M7,P5,P6) [H]</p> <p>A8. Bring things as needed (scented stick holder, box of scented sticks, matches) (M1,M2,M4,M6,M7,P1,P5) [H]</p> <p>A9. Remind Mrs C to check that there are no flames etc (P7,V3) [E]</p> <p>A10. Open window if smoke or scent too strong (P8,M9) [H]</p> <p>A11. Ask Mrs C if she is comfortable or if she needs anything else to make her comfortable (P2,V1,V2) [E]</p> <p>A12. Play recorded appropriate music/chant if asked by Mrs C (M8,M10,P9) [E]</p> <p>A13. Ask Mrs C if she needs help to get up when she finishes praying (P2,P4,V1) [E]</p> <p>A14. Bring Mrs C a glass of water to drink at the end of praying (M1,M2,M4,M6,M7,P1,P5,P6) [H]</p> <p>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]</p>	<p>A14'. Suggest Mrs C to drink a glass of water</p> <p>A8'+A14''. Permanently attach a tray to the robot's chest to bring objects</p> <p>A15'. Provide general comments about religion.</p>
<p>Left: Robot motor capabilities required</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>M1. Grasp objects (A8,A14)</p> <p>M2. Carry lightweight items (A8,A14)</p> <p>M3. Support for equilibrium/standing/sitting (A6)</p> <p>M4. Navigate autonomously in the house (A5,A7,A8,A14)</p> <p>M5. Track moving objects / persons (A5)</p> <p>M6. Reach a target / person (A6,A8,14)</p> <p>M7. Avoid unexpected static or moving obstacles / persons (A7,A8,A14)</p>	<ul style="list-style-type: none"> - no dedicated module, it could be achieved with external libraries - feasible if payload is <300 g - not feasible - ALNavigation - ALLandmarkDetection, ALColorBlobDetection, ALVisionRecognition, ALCloseObjectDetection - ALVisionRecognition, ALCloseObjectDetection, ALNavigation - ALMotion

	<p>M8. Turn on radio / TV /cassette player (A12)</p> <p>M9. Open doors / windows (by communicating with smart environment) (A10)</p> <p>M10. Operate appliance (by communicating with smart environment) (A12)</p> <p>M11. Show feelings (A1,A15)</p>	<ul style="list-style-type: none"> - ALAudioPlayer For external devices, It could be achieved with a specific communication protocol - It could be achieved with a specific communication protocol - It could be achieved with a specific communication protocol - ALLeds, ALRobotPosture, ALAnimationPlayer
<p>Left: Robot perceptual capabilities required</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>P1. Locate persons (distance and position) (A6,A8,A14)</p> <p>P2. Recognize posture, gesture, movements (A6,A11,A13)</p> <p>P3. Recognize emotions (A15)</p> <p>P4. Recognize actions (A1,A5,A6,A13,A15)</p> <p>P5. Recognize obstacles / uneven ground (A7,A8,A14)</p> <p>P6. Recognize/ Locate items (A7,14)</p> <p>P7. Recognize fire / flame (A9)</p> <p>P8. Recognize level of smoke/ scent (A10)</p> <p>P9. Retrieve / store information (A1,A2,A12)</p>	<ul style="list-style-type: none"> - ALPeoplePerception - no dedicated module, it could be achieved with external libraries - ALMood - no dedicated module, it could be achieved with external libraries - ALLaser, ALSonar - ALVisionRecognition - not feasible, it could be achieved by communicating with the smart environment using a specific protocol - not feasible, it could be achieved by communicating with the smart environment using a specific protocol - ALMemory
<p>Left: Robot verbal capabilities involved</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>V1. Ask Yes/ No questions (A3,A4,A11,A13)</p> <p>V2. Ask multiple choice questions (A1,A3,A4,A11,A15)</p> <p>V3. Suggest / remind (A2,A9)</p> <p>V4. Context dependent chat (A1,A15)</p> <p>V5. Encourage/ praise (A2)</p>	<ul style="list-style-type: none"> - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech,

	V6. Report information (A2)	ALTabletService - ALMemory, ALTextToSpeech, ALTabletService
Which “qualitative” robot behavior is expected to be culturally dependent	<p>R1. Show interest in learning about Hinduism and customs during prayer</p> <p>R2. Robot should have access to relevant dates as she may also want to pray for blessings for family members and close friends - birthdays/wedding anniversaries/death anniversaries etc</p> <p>R3. Knowing the time of the day for praying</p> <p>R4. Knowing how long the person normally prays</p> <p>R5. Helping person’s position during praying</p> <p>R6. Maintaining Mrs C ‘s privacy and silence</p> <p>R7. Show respect for the customs and process of the prayer</p> <p>R8. Ask Mrs C how she feels after the prayer</p>	
Which behavior is “quantitatively” different depending con culture (volume and tone of voice, distance, velocity, etc)	<p>T1. Speaks with soft tone whilst helping with preparation for prayer</p> <p>T2. Speaks with soft tone while asking Mrs C how she feels after the prayer</p> <p>T3. Walks in low speed</p> <p>T4. Keeps acceptable distance from Mrs C</p>	

1.5 MRS CHATERJEE - LUNCH ROUTINE, EATING

Scenario name	Mrs Chaterjee - Lunch routine, Eating	
Time of the day	Lunch time	
General Description	<p><....> Because of health problems (thyroid and high cholesterol) Mrs C has normally a light lunch. Usually dhal ¹ and fish curry².</p> <p>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</p> <p>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.</p>	<ol style="list-style-type: none"> 1. lentils 2. Bengalis are very fond of fish curry and they prefer to have it every day if possible. 3. rice (basmati) 4. round bread made of flour but it is not fried and can be made with wheat flour 5. containers, rolling pins, etc are brought from India 6. common way of eating. Indians actually say that you cannot enjoy the food if you don't eat with your hand.
Functional areas of the house involved	<p>F1. Kitchen</p> <p>F2. Kitchen table</p> <p>F3. Or dining table in another room</p>	
Relevant objects involved	<p>O1. Brass utensils most probably brought from India</p> <p>O2. Possibly special frying pan for making chapatis</p> <p>O3. Plates/glass</p> <p>O4. Chairs/ stools</p>	
Relevant persons (in addition to user and caregiver)	<p>B1. No-one</p>	
What a human (formal or informal) caregiver shall / can do in this scenario	<p>H1. Assist with the warming of the food</p> <p>H2. Making the dough for the chapatis</p> <p>H3. Rolling the chapatis and cooking them</p> <p>H4. Bring everything at the table</p>	

	<p>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</p>	
Cultural knowledge involved (top level concepts in the Cultural Knowledge hierarchy)	<p>C1. Indian way of cooking C2. Utensils used in Indian cooking C3. Dietary preferences based on region of India, caste and religion C4. Way of eating (use of right hand) C5. Way of serving C6. Indian music C7. Order food is served</p>	
Which “qualitative” caregiver behavior is expected to be culturally dependent	<p>D1. Time of eating D2. Type of food D3. Order of having the food. For Bengalis, dhal is offered first, and then the vegetable, then chicken or 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 to eat and be served or be offered food multiple times. In addition many more dishes will have been prepared. D7. Indirect questioning</p>	
Which behavior is “quantitatively” different depending con culture (volume and tone of voice, distance, velocity, etc.)	<p>E1. Polite and soft tone of voice E2. Unrushed walking and eating E3. Being silent when needed</p>	
What the robot shall / can do in this scenario Right: Alternative tasks	<p>A1. Recommend dishes (P4,P5,V3,V5) [E] A2. Provide recipes (P4,V4) [E] A3. Remind Mrs C of needed groceries (P4,V3,V7) [E] A4. Locate things as needed (food, kitchen tools, medication) (M3,M5,P2,P3) [H] A5. Bring things as needed (food, kitchen tools, medication) to the table (M1,M2,M3,M4,M5,P1,P2) [H] A6. Praise on eating a healthy and balanced diet (V3,V5,V6) [E]</p>	<p>A3'. Knowing the recipes given in A2, ask Mrs C if each of the needed ingredients is present and create a list on the tablet A3''. Ask Mrs C if she wants to generate some reminders for missing ingredients A4'+A5'. Tell Mrs C the positions of needed objects in the environment,</p>

	<p>A7. Suggest healthy food (e.g. salad) and to drink water (V5,V6) [E]</p> <p>A8. Keep company during lunch (V1,V2,V5) [E]</p> <p>A9. Remind her to take her medication (P4,V3) [E]</p> <p>A10. Comment on how 'good' the dishes look and congratulate her for her cooking abilities (M6,V5,V6) [H]</p> <p>A11. Ask Mrs C if she wants to hear some music and in case play Indian music (M7,M8,P6,V1) [H]</p>	<p>knowing them a priori, or detecting them by using markers.</p> <p>A5''. Permanently attach a tray to the robot's chest to bring objects</p> <p>A10'. Provide general comments on dishes</p> <p>A11'. Ask Mrs C if she wants to hear radio and the type of music. Then, reproduce the selected radio channel</p>
<p>Left: Robot motor capabilities required</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>M1. Grasp objects (A5)</p> <p>M2. Carry lightweight items (A5)</p> <p>M3. Navigate autonomously in the house (A4,A5)</p> <p>M4. Reach a target / person (A5)</p> <p>M5. Avoid unexpected static or moving obstacles / persons (A4,A5)</p> <p>M6. Show feelings (A10)</p> <p>M7. Turn on radio / TV / cassette player (A11)</p> <p>M8. Operate appliance (by communicating with smart environment) (A11)</p>	<p>- no dedicated module, it could be achieved with external libraries</p> <p>- feasible if payload is <300 g</p> <p>- ALNavigation</p> <p>- ALVisionRecognition, ALCloseObjectDetection, ALNavigation</p> <p>- ALMotion</p> <p>- ALLeds, ALRobotPosture, ALAnimationPlayer</p> <p>- ALAudioPlayer</p> <p>For external devices, It could be achieved with a specific communication protocol</p> <p>- It could be achieved with a specific communication protocol</p>
<p>Left: Robot perceptual capabilities required</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>P1. Locate persons (distance and position) (A5)</p> <p>P2. Recognize obstacles / uneven ground (A4,A5)</p> <p>P3. Recognize/ Locate items (A4)</p> <p>P4. Retrieve / store information (A1,A2,A3,A9)</p> <p>P5. Recognize persons / faces (A1)</p> <p>P6. Recognize actions (A11)</p>	<p>- ALPeoplePerception</p> <p>- ALLaser, ALSonar</p> <p>- ALVisionRecognition</p> <p>- ALMemory</p> <p>- ALFaceDetection</p> <p>- no dedicated module, it could be achieved with external libraries</p>
<p>Left: Robot verbal capabilities involved</p>	<p>V1. Ask Yes/ No questions (A8,A11)</p>	<p>- ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService</p>

Right: Corresponding Pepper API (if any)	<p>V2. Ask multiple choice questions (A8)</p> <p>V3. Suggest / remind (A1,A3,A6,A9)</p> <p>V4. List instructions (A2)</p> <p>V5. Context dependent chat (A1,A6,A7,A8,A10)</p> <p>V6. Encourage/ praise (A6,A7,A10)</p> <p>V7. Report information (A3)</p>	<p>- ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService</p> <p>- ALDialog, ALTextToSpeech, ALTabletService</p> <p>- ALDialog, ALTextToSpeech, ALTabletService</p> <p>- ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService</p> <p>- ALDialog, ALTextToSpeech, ALTabletService</p> <p>- ALMemory, ALTextToSpeech, ALTabletService</p>
Which “qualitative” robot behavior is expected to be culturally dependent	<p>R1. Way of serving</p> <p>R2. Being discreet</p> <p>R3. Being silent when elders are speaking</p> <p>R4. Asks indirect questions</p>	
Which behavior is “quantitatively” different depending con culture (volume and tone of voice, distance, velocity, etc)	<p>T1. Speaks with soft tone</p> <p>T2. Speaks in low volume</p> <p>T3. Walks in low speed</p> <p>T4. Stands not too close to Mrs C</p>	

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	<p><...> after her light lunch Mrs C 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 favourite soft blanket. She closes her eyes and meditates⁴ for a while. She soon falls asleep.</p> <p>After half hour she wakes up refreshed and looks for her slippers; she puts them on and takes a look outside.....</p>	<p><i>1.She may slowly reciting the name of Durga with a suitable mantra at every bead of the Japa Mala she holds in her hands (Japa Mala is a praying string of beads made out of 108 beads and she may recite the name of the God that she believes in eg most Bengalis probably pray to Durga and Ganesha).</i></p> <p><i>She may also say slowly the words: Buddham Sharanam Gacchami (a Buddhist mantra) even though she is a Hindu.</i></p>
Functional areas of the house involved	F1. Living room	
Relevant objects involved	O1. Armchair O2. Stool O3. blanket O4. Radio O5. Japa mala (praying 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 involved (top level concepts in the Cultural Knowledge)	C1. Use of words in Hindi C2. Indian meditation and how is performed C3. The significance of the praying spring	

hierarchy)	C4. Knowledge regarding the number of beads	
Which “qualitative” caregiver behavior is expected to be culturally dependent	D1. Personal space - Distance from Mrs C D2. Bringing the Japa Mala to Mrs C D3. Maintaining a quiet environment	
Which behavior is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc.)	E1. Polite and soft tone, low volume of voice E2. Moving about in calm slow manner E3. Gestures are gentle and not too exaggerated	
Left: What the robot shall / can do in this scenario Right: Alternative tasks	A1. Walk towards Mrs C (M4,M5,M7,P1,P5,P6) [E] A2. Ask Mrs C if she would like to meditate (P2,P3,V1) [E] A3. Ask Mrs C if she would like the radio on, off, or meditation music (V2) [E] A4. Put on appropriate meditation music if needed (M8,M9) [E] 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]	A5'-A7'. Tell Mrs C the positions of needed objects in the environment, knowing them a priori, or detecting them by using markers. A7''. Permanently attach a tray to the robot's chest to bring objects
Left: Robot motor capabilities required Right: Corresponding Pepper API (if any)	M1. Coordinately move base/ arms/ hands (A5) M2. Grasp objects (A7) M3. Carry lightweight items (A7) M4. Navigate autonomously in the house (A1,A6,A7) M5. Reach a target / person (A1,A5,A7)	- ALMotion - no dedicated module, it could be achieved with external libraries - feasible if payload is <300 g - ALNavigation - ALVisionRecognition,

	<p>M6. Push objects (A5)</p> <p>M7. Avoid unexpected static or moving obstacles / persons (A1,A6,A7)</p> <p>M8. Turn on radio / TV /cassette player (A4)</p> <p>M9. Operate appliance (by communicating with smart environment) (A4)</p> <p>M10. Show feelings (A11)</p>	<p>ALCloseObjectDetection, ALNavigation</p> <ul style="list-style-type: none"> - no dedicated module, the safety module should be deactivated - ALMotion - ALAudioPlayer <p>For external devices, It could be achieved with a specific communication protocol</p> <ul style="list-style-type: none"> - It could be achieved with a specific communication protocol - ALLeds, ALRobotPosture, ALAnimationPlayer
<p>Left: Robot perceptual capabilities required</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>P1. Locate persons (distance and position) (A1,A7)</p> <p>P2. Recognize posture, gesture, movements (A2,A9)</p> <p>P3. Recognize emotions (A2)</p> <p>P4. Recognize actions (A8,A9)</p> <p>P5. Recognize persons / faces (A1)</p> <p>P6. Recognize obstacles / uneven ground (A1,A6,A7)</p> <p>P7. Recognize/ Locate items (A5,A6)</p> <p>P8. Retrieve / store information (A8,A11)</p> <p>P9. Keep track of time (A9)</p>	<ul style="list-style-type: none"> - ALPeoplePerception - no dedicated module, it could be achieved with external libraries - ALMood - no dedicated module, it could be achieved with external libraries - ALFaceDetection - ALLaser, ALSonar - ALVisionRecognition - ALMemory - no dedicated module, it could be achieved with different solutions
<p>Left: Robot verbal capabilities involved</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>V1. Ask Yes/ No questions (A2,A8,A11)</p> <p>V2. Ask multiple choice questions (A3,A11)</p> <p>V3. Context dependent chat (A11)</p> <p>V4. Encourage/ praise (A9,A10)</p>	<ul style="list-style-type: none"> - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech, ALTabletService
<p>Which “qualitative” robot behavior is expected to be</p>	<p>R1. Bringing the Japa Mala to Mrs C</p> <p>R2. Maintaining a quiet environment for meditation</p>	

culturally dependent	R3. Do not touch
Which behavior is “quantitatively” different depending con culture (volume and tone of voice, distance, velocity, etc)	T1. Speaks with soft tone
	T2. Speaks in low volume
	T3. Walks in low speed
	T4. Stands not too close to Mrs C
	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	<p><...> 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.</p> <p>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.</p>	<p>1. Boils the water, puts in some spices such as cinnamon and a couple of cloves, some sugar, milk and tea leaves. She lets it boil and then turns off the heat and lets it brew.</p> <p>2. Fruit cake, made with different dried fruits and almonds.</p> <p>3. Karma refers to actions from previous existence determining the future state of a person. Similar to fate.</p>
Functional areas of the house involved	<p>F1. Living room</p> <p>F2. Kitchen</p> <p>F3. Outside areas of the house (garden)</p>	
Relevant objects involved	<p>O1. Walking stick</p> <p>O2. Slippers</p> <p>O3. Shoes</p> <p>O4. Coat and hat</p> <p>O5. Coat stand</p> <p>O6. Teapot</p> <p>O7. Cups</p> <p>O8. Tea</p> <p>O9. Spices</p> <p>O10. Indian cake</p>	
Relevant persons (in addition to user and	<p>B1. No-one</p>	

caregiver)		
What a human (formal or informal) caregiver shall / can do in this scenario	H1. Help her put the slippers on/OFF H2. Information about the weather 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 H6. Accompany her to the walk H7. Warning as they walk of uneven pavement or steps (prevent fall due to poor eyesight) H8. Assist with making the tea H9. Bring the cakes/tea biscuits H10. Keep company, e.g. talk about her son	
Cultural knowledge involved (top level concepts in the Cultural Knowledge hierarchy)	C1. Indian way of making tea C2. Indian snacks and sweets C3. Use of words in Hindi C4. Understanding the belief in Karma	
Which “qualitative” caregiver behavior is expected to be culturally dependent	D1. Able to prepare Indian tea D2. Motivating exercising as part of living a healthy life D3. Being compassionate to Mrs C whilst walking with her in the garden aiming at preserving her dignity 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 “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc.)	E1. Polite and soft tone, low volume of voice E2. Moving about in calm slow manner E3. Gestures are gentle and not too exaggerated	
Left: What the robot shall / can do in this scenario Right: Alternative tasks	A1. Help Mrs C to put coat on (M1,M2,M3,M8,P1,P2,P7,P12) [H] A2. Locate things as needed (reading glasses, shoes, slippers, coat, hat, walking stick, cup, biscuits, cake) (M5,M10,P6,P7) [H] A3. Bring things as needed (reading glasses, shoes, slippers, coat, hat, walking stick, cup, biscuits, cake) (M2,M3,M5,M8,M10,P1,P6) [H] A4. Provide information about the weather (P8,P10,V5) [E] A5. Suggest a walk and accompany her during the walk	A1'. Bring a coat hanger (which has wheels) to Mrs C, and then bring it back to its place. A2'+A3'. Tell Mrs C the positions of needed objects in the environment, knowing them a priori, or detecting them by using markers. A3''. Permanently attach a tray to the robot's chest to bring objects A5'+A9'. Suggest a walk, waiting at

	<p>(M6,M7,M10,M11,P4,V1,V2,V4) [H]</p> <p>A6. Comment on the flowers and suggest Mrs C to look at a bird when one is in view (M12,P7,V2,V3) [H]</p> <p>A7. Remind her to be careful (P6,V2) [E]</p> <p>A8. Count the steps Mrs C is taking and compare with the number of steps she did in previous days (P5,P8) [H]</p> <p>A9. Scan the garden and informs Mrs C when she is approaching a dip or uneven surface (M9,M10,P6,V2,V5) [H]</p> <p>A10. Take pictures /selfies near the flowers (P11) [H]</p> <p>A11. Provide encouragement and praise (M12,P3,V3,V4) [E]</p> <p>A12. Suggest that they could return to the house (P5,P9,V1,V2) [E]</p> <p>A13. Hold tray with cake on it (M1,M4,P7) [H]</p>	<p>home</p> <p>A6''. Talk about typical flowers and birds that could be seen given the time of the year.</p> <p>A8''. Keep track of time and provide comments and comparisons.</p> <p>A8'''. Use a wearable device worn by Mrs C (watch, accelerometer) to compute steps and movements, and provide comments.</p> <p>A9''. Periodically remind Mrs C to pay attention to the ground</p> <p>A10'. Take pictures of Mrs C.</p> <p>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.</p> <p>A13'. Suggest Mrs C to bring the tray with cake</p>
<p>Left: Robot motor capabilities required Right: Corresponding Pepper API (if any)</p>	<p>M1. Coordinately move base/ arms/ hands (A1,A13)</p> <p>M2. Grasp objects (A1,A3)</p> <p>M3. Carry lightweight items (A1,A3)</p> <p>M4. Carry heavyweight items (A13)</p> <p>M5. Navigate autonomously in the house (A2,A3)</p> <p>M6. Track moving objects / persons (A5)</p> <p>M7. Follow moving objects / persons (A5)</p> <p>M8. Reach a target / person (A1,A3)</p> <p>M9. Move on uneven ground (A9)</p> <p>M10. Avoid unexpected static or moving obstacles / persons (A2,A3, A5,A9)</p>	<ul style="list-style-type: none"> - ALMotion - no dedicated module, it could be achieved with external libraries - feasible if payload is <300 g - not feasible - ALNavigation - ALLandmarkDetection, ALColorBlobDetection, ALVisionRecognition, ALCloseObjectDetection - ALVisionRecognition, ALCloseObjectDetection, ALNavigation - ALVisionRecognition, ALCloseObjectDetection, ALNavigation - ALMotion

	<p>M11. Open doors / windows (by communicating with smart environment) (A5)</p> <p>M12. Show feelings (A6,A11)</p>	<ul style="list-style-type: none"> - ALMotion - It could be achieved with a specific communication protocol - ALLeds, ALRobotPosture, ALAnimationPlayer
<p>Left: Robot perceptual capabilities required Right: Corresponding Pepper API (if any)</p>	<p>P1. Locate persons (distance and position) (A1,A3)</p> <p>P2. Recognize posture, gesture, movements (A1)</p> <p>P3. Recognize emotions (A11)</p> <p>P4. Recognize actions (A5)</p> <p>P5. Detect human steps (A8,A12)</p> <p>P6. Recognize obstacles / uneven ground (A2,A3,A7,A9)</p> <p>P7. Recognize/ Locate items (A1,A2,A6,A13)</p> <p>P8. Retrieve / store information (A4,A8)</p> <p>P9. Keep track of time (A12)</p> <p>P10. Recognize weather/ temperature (A4)</p> <p>P11. Take pictures (A10)</p> <p>P12. Recognize persons / faces (A1)</p>	<ul style="list-style-type: none"> - ALPeoplePerception - no dedicated module, it could be achieved with external libraries - ALMood - no dedicated module, it could be achieved with external libraries - not feasible, it could be achieved by communicating with wearable sensors - ALLaser, ALSonar - ALVisionRecognition - ALMemory - no dedicated module, it could be achieved with different solutions - no dedicated module, it could be checked the broadcast on internet or by communicating with the smart environment - ALPhotoCapture - ALFaceDetection
<p>Left: Robot verbal capabilities involved Right: Corresponding Pepper API (if any)</p>	<p>V1. Ask Yes/ No questions (A5,A12)</p> <p>V2. Suggest / remind (A5,A6,A7,A9,A12)</p> <p>V3. Context dependent chat (A6,A11)</p> <p>V4. Encourage/ praise (A5,A11)</p> <p>V5. Report information (A4,A9)</p>	<ul style="list-style-type: none"> - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech, ALTabletService - ALMemory, ALTextToSpeech, ALTabletService

<p>Which “qualitative” robot behavior is expected to be culturally dependent</p>	<ul style="list-style-type: none"> R1. Way of greeting –slight bow, holds palms together R2. Able to prepare Indian tea R3. Motivating Mrs C to exercise as part of living a healthy life R4. Being compassionate to Mrs C whist walking with her in the garden aiming at preserving her dignity R5. Allow Mrs C to hold its arm for her safety R6. Know when to be close and when to keep your distance R7. Do not touch
<p>Which behavior is “quantitatively” different depending con culture (volume and tone of voice, distance, velocity, etc)</p>	<ul style="list-style-type: none"> T1. Speaks with soft tone T2. Speaks in low volume T3. Walks in low speed T4. Not too many gestures 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	<p><...> 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 ginger¹. She also asks for some cloves to chew², 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}</p> <p>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 Bengali⁵. Her friend looks at her and comments on how beautiful she looks in her shawl⁶. Mrs C asks her carer to bring out some snacks and sweets⁷. She also asks her to make sweet masala tea⁸, 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 astrologer⁹ as she wants to consult the stars about her daughter's future.</p>	<ol style="list-style-type: none"> 1. <i>Putting ginger in tea is believed to relief cold symptoms</i> 2. <i>Similarly with chewing cloves, especially when you have a sore throat.</i> 3. <i>Visitors are welcome and need to be treated nicely, offering a snack or tea or coffee.</i> 4. <i>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.</i> 5. <i>Common to talk in native language</i> 6. <i>Big scarf, if winter possibly woolen.</i> 7. <i>Products (chana chur) purchased from a local Indian shop</i> 8. <i>Indian way of making tea, usually, boil water, milk, some spices and tea leafs.</i> 9. <i>It is common to consult astrologers for the couple compatibility, dates for marriage ceremonies, etc.</i>
Functional areas of the	F1. Living room	

house involved	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 (in addition to user and caregiver)	B1. Friend
What a human (formal or informal) caregiver shall / can do in this scenario	H1. Open the door for visitor and greet appropriately H2. Welcome the visitor 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 involved (top level concepts in the Cultural Knowledge hierarchy)	C1. Indian way of making tea C2. Indian snacks and sweets C3. Ayurveda medicine - Home remedies for cold 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” caregiver behavior is expected to be culturally dependent	D1. Proper way of greeting and hospitality D2. Properly addressing the visitor D3. Properly addressing Mrs C as mashi (aunty) D4. Distance from visitor and non-involvement in discussion D5. Finding the clothes Mrs C wants to wear

	<p>D6. Helping in the kitchen, knowing where things are kept</p> <p>D7. Bringing the shawl for Mrs C</p> <p>D8. Makes the masala tea</p> <p>D9. Puts some chana chur in a bowl</p> <p>D10. Serves the tea and sweets to Mrs C and Lila</p> <p>D11. Washes the cups and dishes</p> <p>D12. Touching not desirable for non-family members</p>	
Which behavior is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc.)	<p>E1. Polite and soft tone of voice</p> <p>E2. Keep some distance for non-family members</p> <p>E3. Move gently and with low velocity</p> <p>E4. Smile</p>	
Left: What the robot shall / can do in this scenario Right: Alternative tasks	<p>A1. Ask Mrs C how she is feeling and if she is warm enough (P2,P4,V1,V2) [E]</p> <p>A2. Recommend Mrs C having a tea with ginger for her cold (M10,V3,V4) [E]</p> <p>A3. Greet the visitor performing “Namaste” (M1,M6,M9,P4,V5) [E]</p> <p>A4. Ask the visitor to remove her shoes and leave them by the door (V1,V3) [E]</p> <p>A5. Ask the visitor whether she would like to take her coat off and whether she would like something to drink (V1,V2) [E]</p> <p>A6. Take and hang visitor’s coat H (M2,M3,M4,M7,P1,P6) [H]</p> <p>A7. Provide privacy (M6,P3) [E]</p> <p>A8. Locate clothes for Mrs C (M6,M8,P5,P6) [H]</p> <p>A9. Bring clothes to Mrs C (M3,M4,M6,M7,M8,P1,P5) [H]</p> <p>A10. Ask Mrs C and the visitor how it can help with the tea (V2) [E]</p> <p>A11. Locate relevant objects for tea preparation (ginger, cloves, sweets, cups, plates and tray) (M6,M8,P5,P6) [H]</p> <p>A12. Prepare and bring a tray with tea and sweets in the living room (M2,M3,M5,M6,M7,M8,P1,P5) [H]</p> <p>A13. Ask Mrs C if she needs to retrieve the astronomer’s details (V1,V3) [E]</p> <p>A14. Find the astronomer’s contact details (V6,P7) [E]</p>	<p>A6’. Show the visitor where to hang coat</p> <p>A8’+A9’. Tell Mrs C the positions of needed objects in the environment, knowing them a priori, or detecting them by using markers.</p> <p>A11’+A12’. Locate and indicate objects needed for preparing the tray, knowing their position in the environment, or using markers. Suggest Mrs C to bring the tray with food to the table</p> <p>A12’’. Permanently attach a tray to the robot’s chest to bring objects</p>

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

<p>Which “qualitative” robot behavior is expected to be culturally dependent</p>	<ul style="list-style-type: none"> R1. Proper way of greeting and hospitality R2. Properly addressing the visitor 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
<p>Which behavior is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc)</p>	<ul style="list-style-type: none"> T1. Speaks with soft voice T2. Walks in a low speed T3. Keeps acceptable distance from the visitor T4. Smile frequently

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	<p><...> It is late afternoon now and her son just popped in to visit.</p> <p>He calls her 'Ma' ¹, bends to touch her feet, she touches his head, and they hug². He takes off his shoes³, leaves them close to the door and they go in. They sit on the sofa close together. They start talking about his day. She asks 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.</p> <p>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.</p> <p>She asks him when he will visit her again and he reminds her that next week is Diwali⁴ so he will be coming the day before Diwali to take her so that she can celebrate it with the family.</p> <p>He has to go now, they hug, she touches his head, gives him her blessing, and they say goodbye.</p>	<ol style="list-style-type: none"> 1. <i>Ways of calling mother: Ma or Ama or Ai, or Mata (depending on language)</i> 2. <i>Greetings</i> 3. <i>Entering the house</i> 4. <i>Indian festival of lights, usually in October or November, one of the biggest festivals, celebrating the light over darkness, the good over evil.</i>
Functional areas of the house involved	<p>F1. Living room or bed/living area</p> <p>F2. Outside areas of the house (garden) and entrance</p>	
Relevant objects involved	<p>O1. Sofa</p> <p>O2. Reading glasses</p> <p>O3. Walking stick</p> <p>O4. Shoes</p> <p>O5. Coat and hat</p> <p>O6. Coat stand</p> <p>O7. Smartphone</p>	
Relevant persons (in addition to user and	<p>B1. Son (informal carer)</p>	


caregiver)		
What a human (formal or informal) caregiver shall / can do in this scenario	<p>H1. Encourage her to go for walk H2. Help her put on her shoes, or give the shoes 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. Stay back at the house H8. Keep company and talk about Diwali (informal carer) H9. Switch off the radio H10. Switch off lights as needed.</p>	
Cultural knowledge involved (top level concepts in the Cultural Knowledge hierarchy)	<p>C1. Greeting customs C2. Level of communication and detail of exchange of information C3. Son /parent relationship in Indian culture 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</p>	
Which “qualitative” caregiver behavior is expected to be culturally dependent	<p>D1. Way of greeting with non-family members D2. Distance from visitor and involvement in discussion by non-family D4. Mother –son way of greeting, talking D5. Expression of compassion between mother-son D6. Sharing details of everyday life D7. Touching not desirable for non-family members</p>	
Which behavior is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc.)	<p>E1. Polite and soft tone, low volume of voice E2. Keep some distance for non-family members E3. Moving about in calm slow manner E4. Gestures are gentle and not too exaggerated</p>	
Left: What the robot shall / can do in this scenario Right: Alternative tasks	<p>A1. Greet the visitor performing “Namaste” (M1,M9,M12,P5,V5) [E] A2. Ask the son whether he would like to take his coat off (V1) [E] A3. Take and hang son’s coat (M2,M3,M4,M9,P1,P7) [H] A4. Locate things as needed (reading glasses, shoes, coat, hat,</p>	<p>A3’. Show the son where to hang coat A4’+A5’. Tell Mrs C the positions of needed objects in the environment, knowing them a priori, or detecting them by using markers. A7’. Locate and indicate objects</p>

	<p>walking stick, sweets, cups) (M6,M10,P6,P7) [H]</p> <p>A5. Bring things as needed (reading glasses, shoes, coat, hat, walking stick, sweets, cups) (M3,M4,M6,M9,M10,P1,P6) [H]</p> <p>A6. Ask Mrs C and son how it can help with the tea (V2,V4) [E]</p> <p>A7. Prepare and bring a tray with tea and sweets in the living room (M3,M4,M5,M6,M9,M10,P1,P6,P7) [H]</p> <p>A8. Provide privacy to mother and son (M6,P4) [E]</p> <p>A9. Provide information about the weather (P10,V7) [E]</p> <p>A10. Suggest a walk and accompany them during the walk (M8,M10,P6,P9,V3,V6) [H]</p> <p>A11. Help Mrs C to put coat on (M2,M3,M4,M9,P1,P2,P7) [H]</p> <p>A12. Switch off the radio (M11,M13) [H]</p> <p>A13. Switch off lights (M13,P4) [H]</p> <p>A14. Take a photo of mother and son upon request (M7,P2,P5,P11) [E]</p> <p>A15. Ask Mrs C how she felt about her son’s visit (M14,P3,P8,V2,V4) [E]</p> <p>A16. Remind Mrs C that the son will be coming again next week (P8,V3,V4,V7) [E]</p> <p>A17. Ask the son to enter the date/time of next visit on the touch screen (V1,V2,V4) [E]</p>	<p>needed for preparing the tray, knowing their position in the environment, or using markers. Then suggest Mrs C to bring the tray with food to the table</p> <p>A5''+A7''. Permanently attach a tray to the robot’s chest to bring objects</p> <p>A10'. Suggest a walk.</p> <p>A11'. Indicate the position of the coat.</p> <p>A12'. Remind Mrs C to switch off the radio</p> <p>A12''. Switch off the radio by connecting to the smart environment, or launching radio on its tablet</p> <p>A13'. Remind Mrs C to switch off the lights</p> <p>A13''. Switch off the light by connecting to the smart environment.</p>
<p>Left: Robot motor capabilities required Right: Corresponding Pepper API (if any)</p>	<p>M1. Coordinately move torso/ arms/ hands (A1)</p> <p>M2. Coordinately move base/ arms/ hands (A3,A11)</p> <p>M3. Grasp objects (A3,A5,A7,A11)</p> <p>M4. Carry lightweight items (A3,A5,A7,A11)</p> <p>M5. Carry heavyweight items (A7)</p> <p>M6. Navigate autonomously in the house (A4,A5,A7,A8)</p> <p>M7. Track moving objects / persons (A14)</p> <p>M8. Follow moving objects / persons (A10)</p>	<ul style="list-style-type: none"> - ALMotion - ALMotion - no dedicated module, it could be achieved with external libraries - feasible if payload is <300 g - not feasible - ALNavigation - ALLandmarkDetection, ALColorBlobDetection, ALVisionRecognition, ALCloseObjectDetection - ALVisionRecognition, ALCloseObjectDetection, ALNavigation

	<p>M9. Reach a target / person (A1,A3,A5,A7,A11)</p> <p>M10. Avoid unexpected static or moving obstacles / persons (A4,A5,A7,A10)</p> <p>M11. Turn on /off radio / TV /cassette player (A12)</p> <p>M12. Open doors / windows (by communicating with smart environment) (A1)</p> <p>M13. Operate appliance (by communicating with smart environment) (A12,A13)</p> <p>M14. Show feelings (A15)</p>	<ul style="list-style-type: none"> - ALVisionRecognition, ALCloseObjectDetection, ALNavigation - ALMotion - ALAudioPlayer For external devices, It could be achieved with a specific communication protocol - It could be achieved with a specific communication protocol - It could be achieved with a specific communication protocol - ALLeds, ALRobotPosture, ALAnimationPlayer
<p>Left: Robot perceptual capabilities required</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>P1. Locate persons (distance and position) (A3,A5,A7,A11)</p> <p>P2. Recognize posture, gesture, movements (A11,A14)</p> <p>P3. Recognize emotions (A15)</p> <p>P4. Recognize actions (A8,A13)</p> <p>P5. Recognize persons / faces (A1,A14)</p> <p>P6. Recognize obstacles / uneven ground (A4,A5,A7,A10)</p> <p>P7. Recognize/ Locate items (A3,A4.A7,A11)</p> <p>P8. Retrieve / store information (A15,A16)</p> <p>P9. Recognize dialogue context (A10)</p> <p>P10. Recognize weather/ temperature (A9)</p> <p>P11. Take pictures (A14)</p>	<ul style="list-style-type: none"> - ALPeoplePerception - no dedicated module, it could be achieved with external libraries - ALMood - no dedicated module, it could be achieved with external libraries - ALFaceDetection - ALLaser, ALSonar - ALVisionRecognition - ALMemory - ALSpeechRecognition - no dedicated module, it could be checked the broadcast on internet or by communicating with the smart environment - ALPhotoCapture
<p>Left: Robot verbal capabilities involved</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>V1. Ask Yes/ No questions (A2,A17)</p> <p>V2. Ask multiple choice questions (A6,A15)</p> <p>V3. Suggest / remind (A10,A16,A17)</p>	<ul style="list-style-type: none"> - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech,

	<p>V4. Context dependent chat (A6,A15,A16,A17)</p> <p>V5. Greet (A1)</p> <p>V6. Encourage/ praise (A10)</p> <p>V7. Report information (A9,A16)</p>	<p>ALTabletService</p> <ul style="list-style-type: none"> - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech - ALDialog, ALTextToSpeech, ALTabletService - ALMemory, ALTextToSpeech, ALTabletService
Which “qualitative” robot behavior is expected to be culturally dependent	<p>R1. Way of greeting –slight bow holds palms together</p> <p>R2. Keeps out of mother-son way</p> <p>R3. Provides privacy</p>	
Which behavior is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc)	<p>T1. Speaks with soft tone</p> <p>T2. Speaks in low volume</p> <p>T3. Stands not too close to Mrs C</p> <p>T4. Walks in low speed</p> <p>T5. Keeps acceptable distance from the visitor</p>	

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	<p><...> 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 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 Mrs C's favourite dish and she cannot, not have Hilsha....She 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 rasgulla ².</p>	<p>1. 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 year around, is full of bones but especially loved.</p> <p>2. Typical Bengali sweets</p> 
Functional areas of the house involved	<p>F1. Living room F2. Kitchen</p>	
Relevant objects involved	<p>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</p>	
Relevant persons (in addition to user and caregiver)	<p>B1. Store employee</p>	
What a human (formal or informal) caregiver shall / can do in this scenario	<p>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</p>	

	<p>H5. Make a list of the missing items</p> <p>H6. Bring the phone and phone book</p> <p>H7. Call the local Indian shops</p> <p>H8. Help in case she needs to find new phone numbers</p> <p>H9. Place the order</p> <p>H10. Help Mrs C with cooking</p> <p>H11. Keep company</p> <p>H12. Offer to play music</p> <p>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)</p>	
Cultural knowledge involved (top level concepts in the Cultural Knowledge hierarchy)	<p>C1. Indian dishes from the different parts of India</p> <p>C2. Indian stores that source products from India</p> <p>C3. Names of different dishes</p> <p>C4. Names and uses of different utensils</p> <p>C5. Knowledge on Indian cooking</p> <p>C6. Knowledge of order of dishes to be served: start with dahl, then vegetable dishes, then chicken and fish curry, then sweets</p> <p>C7. Knowledge of favourite music and topics of conversation</p>	
Which “qualitative” caregiver behavior is expected to be culturally dependent	<p>D1. Planning of dinner</p> <p>D2. Awareness about Indian stores and products</p> <p>D3. Possibility that products cannot be purchased from one store</p> <p>D4. Awareness: they may speak in native language during the phone interaction</p> <p>D5. If regular customer , interaction will be slightly different (tone of voice, warmer)</p> <p>D6. Indirect style of communication</p>	
Which behavior is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc.)	<p>E1. Polite and soft tone, low volume of voice</p> <p>E2. Moving about in calm slow manner</p> <p>E3. Gestures are gentle and not too exaggerated</p> <p>E4. Being silent when an elder is talking</p>	
Left: What the robot shall / can do in this scenario Right: Alternative tasks	<p>A1. Remind Mrs C that she is having family for lunch (P6,P7,V3) [E]</p> <p>A2. Recommend dishes (P6,V3,V5) [E]</p> <p>A3. Provide recipes (P6,V4) [E]</p> <p>A4. Walk with Mrs C as she goes through her cabinets and refrigerator (M6,M8,P1,P3,P4,V4,V5) [H]</p>	<p>A4'+A5'. Knowing the recipe and needed ingredients (A3) the robot walk with Mrs C and ask (Y/N) if ingredient X is available, making a list of the ones missing.</p> <p>A6'+A7'. Tell Mrs C the positions of</p>

	<p>A5. Keep notes for Mrs C (P6) [H] A6. Locate things as needed (phone, phone book, food, dishes, kitchen tools,..) (M5,M8,P4,P5) [H] A7. Bring things when needed (phone, phone book, dishes, kitchen tools) (M2,M3,M5,M7,M8,P1,P4) [H] A8. Ask Mrs C if she needs any phone numbers (V1) [E] A9. Place a phone call, saying “please hold on” and then asking Mrs C to talk (P6,V7,V9) [H] A10. Store the information about the expected delivery of the ingredients and remind Mrs C about it. (P6,V3,V8) [H] A11. Ask Mrs C if she is tired and suggest to have a rest for a while (P2,V1,V3) [E] A12. Ask Mrs C information about her favourite foods and food preparation (M9,V2,V5) [E] A13. Help with laying the table (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] A15. Suggest Mrs C to play her favourite music, and play it (M10,M11,P3,V3) E</p>	<p>needed objects in the environment, knowing them a priori, or detecting them by using markers. A9’. Turn with the screen close to Mrs C and place a Skypeout/whatsapp call to the shop. A10’. Ask Mrs C the expected time of delivery of the ingredients (speech/tablet) and remind her about them. A13’. Suggest Mrs C how to lay the table (by observing the action, and suggesting position, eg. “to the right”) A13’’. Make general comments about table preparation. A14’. Suggest Mrs C to bring the tray with food to the table A7’’+A14’’. Permanently attach a tray to the robot’s chest to bring objects A15’. Ask Mrs C if she wants to hear radio and the type of music. Then, reproduce the selected radio channel</p>
<p>Left: Robot motor capabilities required Right: Corresponding Pepper API (if any)</p>	<p>M1. Coordinately move base/ arms/ hands (A13,A14) M2. Grasp objects (A7,A13,A14) M3. Carry lightweight items (A7,A13) M4. Carry heavyweight items (A14) M5. Navigate autonomously in the house (A6,A7,A13,A14) M6. Follow moving objects / persons (A4) M7. Reach a target / person (A7,A13,A14)</p>	<ul style="list-style-type: none"> - ALMotion - no dedicated module, it could be achieved with external libraries - feasible if payload is <300 g - not feasible - ALNavigation - ALVisionRecognition, ALCloseObjectDetection, ALNavigation - ALVisionRecognition, ALCloseObjectDetection, ALNavigation

	<p>M8. Avoid unexpected static or moving obstacles / persons (A4,A6,A7,A13,A14)</p> <p>M9. Show feelings (A12)</p> <p>M10. Turn on radio / TV / cassette player (A15)</p> <p>M11. Operate appliance (by communicating with smart environment) (A15)</p>	<p>- ALMotion</p> <p>- ALLeds, ALRobotPosture, ALAnimationPlayer</p> <p>- ALAudioPlayer</p> <p>For external devices, It could be achieved with a specific communication protocol</p> <p>- It could be achieved with a specific communication protocol</p>
<p>Left: Robot perceptual capabilities required</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>P1. Locate persons (distance and position) (A4,A7)</p> <p>P2. Recognize emotions (A11)</p> <p>P3. Recognize actions (A4,A15)</p> <p>P4. Recognize obstacles / uneven ground (A4,A6,A7,A13,A14)</p> <p>P5. Recognize/ Locate items (A6,A13,A14)</p> <p>P6. Retrieve / store information (A1,A2,A3,A5,A9,A10)</p> <p>P7. Recognize persons / faces (A1)</p>	<p>- ALPeoplePerception</p> <p>- ALMood</p> <p>- no dedicated module, it could be achieved with external libraries</p> <p>- ALLaser, ALSonar</p> <p>- ALVisionRecognition</p> <p>- ALMemory</p> <p>- ALFaceDetection</p>
<p>Left: Robot verbal capabilities involved</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>V1. Ask Yes/ No questions (A8,A11)</p> <p>V2. Ask multiple choice questions (A12)</p> <p>V3. Suggest / remind (A1,A2,A10,A11,A15)</p> <p>V4. List instructions (A3)</p> <p>V5. Context dependent chat (A2,A4,A12)</p> <p>V6. Greet (A9)</p> <p>V7. Encourage/ praise (A9)</p> <p>V8. Report information (A10)</p> <p>V9. Place a phone call (A9)</p>	<p>- ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService</p> <p>- ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService</p> <p>- ALDialog, ALTextToSpeech, ALTabletService</p> <p>- ALDialog, ALTextToSpeech, ALTabletService</p> <p>- ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService</p> <p>- ALDialog, ALTextToSpeech</p> <p>- ALDialog, ALTextToSpeech, ALTabletService</p> <p>- ALMemory, ALTextToSpeech, ALTabletService</p> <p>- no dedicated module, it could be achieved with external libraries</p>

Which “qualitative” robot behavior is expected to be culturally dependent	R1. Helps with planning of dinner R2. Contacts Indian stores for different products 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 “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc)	T1. Speaks with soft tone T2. Speaks in low volume T3. Be silent when needed T4. Walks in low speed T5. Not too many gestures T6. Stands not too close to Mrs C

2. MR CHATERJEE – SCRIPT

Mr Debashish Chaterjee is a 75 year old Indian, Hindu, man from West Bengal. He was born in a city close to Kolkata and after completing his engineering degree in India he was married¹ and immigrated to the UK. Mr Chaterjee² is a Bengali *Brahmin*³. He highly values tradition and education and he likes to be treated with politeness and respect.

He has a son and a daughter. His wife died a few years ago. Both his children live relatively close and he sees them often. Mr Chaterjee has high cholesterol and a thyroid problem for which he takes regularly medication⁴. He also believes in homeopathy therefore he is also taking regularly some ayurveda drops⁵ for his thyroid problem. At the age of 30 he was diagnosed with retinitis pigmentosa (a genetic disease that affects the eyes)⁶. Through the years he started developing tunnel vision (losing his side vision) and he is slowly losing the ability to distinguish colours. In the last year his eye condition deteriorated and he had to move into a care home.

His eye condition is creating a lot of stress and problems in his everyday life.

He likes to walk but now he hardly goes outside because he is scared of falling. He cannot always see the steps or uneven surfaces. A few weeks ago his grandchild came to visit and bend to touch his feet⁸ but he couldn't see her and almost knocked her over. He was very sad about that.

Today he woke up with a little bit of cold. He calls his carer to help him make a hot drink. He would like to have some hot tea with ginger⁹. He also asks for some cloves to chew¹⁰, they are good for the sore throat. His good friend Pranab comes over. He is still in his pyjamas and robe but insists that he comes in. He needs to come in and have at least a cup of tea.^{11,12}

They start chatting in Bengali¹³ and he goes in and gets dressed quickly. He asks her carer to bring out some snacks and sweets¹⁴. He also asks her to make sweet masala tea¹⁵, just the way his friend likes it. They sit comfortably and continue to chat. His friend has a daughter around 25 and he is getting worried about her marriage¹⁶.

1. He had an arranged marriage

2. 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

3. Brahmins belong in the high cast

4. Respect to western medicine

5. Ayurveda is a system of medicine with roots in the India subcontinent

6. Retinitis pigmentosa is a genetic disease that affects the eyes. This is a progressive disease for which unfortunately there is no cure

7. Common to have more than one helpers among middle class families

8. Respectful way to greet an elderly loved one

9. Putting ginger in tea is believed to relief cold symptoms

10. Similarly with chewing cloves, especially when you have a sore throat.

11. Visitors are welcome and need to be treated nicely, offering a snack or tea or coffee.

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

14. Products purchased from a local Indian shop

After his friend leaves he goes to his bedroom to properly dress up. He puts on one of his comfortable kurtas and a pair of regular trousers. He wears a comfortable fleece jacket that his son presented, raps a woolen muffler around his neck and puts on a hat. His children tend to tease him when seeing him wearing a hat inside the house but for him this is the only way to stay warm.

He likes to wear both western and Indian traditional clothes. He has nice suits, shirts, sweaters, ties and nice tailored trousers but also nice silk Punjabis, Nehru jackets, and dhotis¹⁷. When he is attending an Indian wedding he always likes to wear a silk dhoti and kurta as his late wife who had a beautiful selection of saris¹⁸.

After dressing Mr C will light a scented stick to Lord Ganesha¹⁹ and pray for the removal of obstacles and health for all his family/friends²⁰. In the corner of his bedroom, he has a small table with a couple of small statues of Ganesha, Shiva and Durga²¹.

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. He will spend there a few minutes, standing or sitting on the floor, with his hands in 'namaste'²².

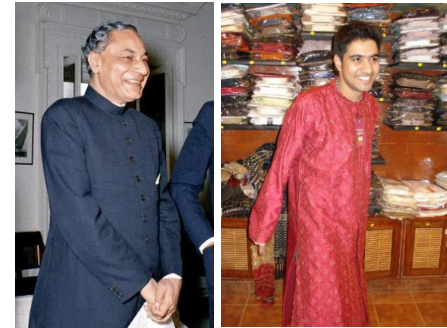
It is now mid-morning, Mr C finished his exercise and he would like to have a cup of tea and listen to the news. He will make a simple cup of tea (using a tea bag) not the Indian way²³. He used to read the newspaper along with his wife but now he will put the radio on and listen to the news. He likes to put on BBC or the Bengali channel, or the Indian TV²⁴ channel news. Then he will switch on his audio book. He will listen for 20 minutes and then he will talk with his children on the phone. They have their regular time, he or they will call every day.

After his wife died and because of his health problems (thyroid and high cholesterol) he has a light lunch. Usually dhal²⁵ and fish curry²⁶. He likes to cook and along with the help of his carer (who usually assists with cutting the vegetables) he has prepared enough dhal and fish curry for lunch and dinner and has kept them in two containers. His favourite dish is fish with mustard curry sauce. Instead of bhat²⁷ he will have two chapatis.²⁸

15 Indian way of making tea, usually.. boil water, milk, some species and tea leaves

16. Role of astrology

17. Nehru jacket style, kurta



18. dresses and different ways of dressing. In addition, ways of dressing if you are mourning or widow (old widow, younger etc)

19. The 'elephant' God the patron of art and sciences and the removal of obstacles

20 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

21 . 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.

22. '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.

23. Knowing the Indian way of making tea

24. Indian TV channels /radio

He will put in two smaller bowls dhal and fish curry and warm them up. He will sit at the table and with his left hand, he will first serve the dhal, then the fish curry. He likes eating with his hand (right hand only, serving with left)²⁹. He may have some cucumber also and some mango chutney. He will then have a glass of water and his medication.

After his light lunch now he is sitting comfortably in his armchair in the living room. The radio is on at the background. He has his feet on a stool and he is covered by his favorite soft blanket. He closes his eyes and meditates³⁰ for a while. He soon falls asleep. After half hour he wakes up refreshed and looks for his slippers; he puts them on and takes a look outside. It is not raining and he has been told by his carer that it is not too cold outside today. He decides to go for a short walk in the garden. He struggles to put his coat on and grabs his walking stick which is hanging by the door.

After his nice walk, it is time for some tea. He takes the time to make a nice cup of tea³¹. He likes to have his tea with some tea biscuits or cake³² brought by his son in his last visit.

It is late afternoon now and his son just popped in to visit.

He calls him 'Baba'³³, bends to touch his feet, he touches his head, and they hug³⁴. He takes off his shoes³⁵, leaves them close to the door and they go in. They start talking about his day. He asks about his work and the children. His son asks of what he did since he last visited. He shows him some of the latest photos on his smartphone from the children and family. He brings his glasses. They talk, and laugh. Then they take a selfie together and he also takes a photo of him. They like to talk about politics and the latest news from around the world. Before he leaves he helps him put his coat and hat on and takes him for a walk in the garden. He tells him, that walking and exercising is good for him. He likes it when his son is taking care of him and cares about him.

Mr C asks him when he will visit him again and he reminds him that next week is Diwali³⁶ so he will be coming the day before Diwali to take him so that he can celebrate it with the family.

He has to go now, they hug, he touches his head, gives him her blessing, and

25. *lentils*

26. *Bengalis are very fond of fish curry and they prefer to have it every day if possible.*

27. *Rice (basmati)*

28. *Round bread made of flour and cooked on the fire.*

29. *Common way of eating. Indians actually say that you cannot enjoy the food if you don't eat with your hand.*

30. *He 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 Gujarati's most probably Krishna, Bengalis most probably Durga) or She may say slowly the words: Buddham Sharanam Gacchami (a Buddhist mantra)*

31. *Boils the water, puts in some spices such as cinnamon and a couple of cloves, some sugar, milk and tea leaves. She lets it boil and then closes the heat and lets it brew.*

32. *Fruit cake, made with different dried fruits and almonds.*

33. *Way of calling father.*

34. *Greetings*

35. *Entering the house*

36. *Indian festival of lights, usually in October or November, one of the biggest festivals, celebrating the light over darkness, the good over evil.*

37. *way of calling grandfather.*

38. *Luchi, a fried flat bread.*



they say goodbye.

On Sunday his daughter, son in-law and granddaughter will be visiting for dinner. Now he needs to plan for dinner and he is very excited about the visit. He knows that his grandchildren appreciate Dadu's³⁷ cooking. He will make luchi puri³⁸. His granddaughter's favourite dish along with a simple chicken with potatoes curry .

He needs to call the Indian grocery shop and place an order.

He asks his carer to help with the organization. (Calling the stores, ordering, making sure he has all the spices he will need, the specific cooking oil and flour for the luchi.) Oh... he also needs to order sweets, some gulab jamun³⁹.

The carers used to call him Mr Chaterjee when he first moved in the care home, but now they call him Kaku⁴⁰ or 'uncle '.

39. Indian sweet.



40. way of calling uncle.

2.1 MR CHATERJEE – MORNING ROUTINE, BREAKFAST


Scenario name	Mr Chaterjee – Morning routine, Breakfast	
Time of the day	Morning	
General Description	<p><...> Mr C got up as usual very early in the morning (around 7 am) and had his cup of tea with a tea biscuit. He used to read the newspaper along with his wife but now he will put the radio on and listen to the news. He likes to put on the Bengali channel, or the Indian TV channel news.</p> <p>Then he may have cereal, or some fruit or porridge or he may have a chapatti with leftover vegetable curry¹. He loves English breakfast² but because of his cholesterol problem he tries to avoid eggs/sausages, etc</p>	<p><i>1.It is not uncommon to have some leftover food for breakfast</i></p> <p><i>2.Common foods for breakfast (tea, toast, cereal/porridge, boiled eggs, fried/grilled bacon, sausage, baked beans, tomatoes.)</i></p>
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 he is doing H2. Ask what Mr 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 he would like to have tea or coffee or juice	

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

	<p>(M7,M8,V4) [H->E]</p> <p>A10. Keep company to Mr C while eating (P3,P8,V1,V2,V4) [E]</p> <p>A11. Comment on his dietary choices (M9,P3,P7,V4,V6) [H]</p> <p>A12. Inform Mr C if he has any text /telephone messages and reads them to him (M8,P7,V7) [E]</p>	<p>(known a priori) internet radio channel.</p> <p>A9''. Ask Mr C if she wants to hear radio and the type of music. Then, reproduce the selected radio channel</p> <p>A11'. Provide general dietary advices</p> <p>A12'. Check email or events from apps such as Whatsapp / Viber</p>
<p>Left: Robot motor capabilities required</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>M1. Grasp objects (A5,A6,A7)</p> <p>M2. Carry lightweight items (A5,A6,A7)</p> <p>M3. Carry heavyweight items (A7)</p> <p>M4. Navigate autonomously in the house (A4,A7)</p> <p>M5. Reach a target / person (A1,A5,A7)</p> <p>M6. Avoid unexpected static or moving obstacles / persons (A4,A5,A7)</p> <p>M7. Turn on radio / TV /cassette player (A9)</p> <p>M8. Operate appliance (by communicating with smart environment) (A9,A12)</p> <p>M9. Show feelings (A1,A11)</p>	<p>- no dedicated module, it could be achieved with external libraries</p> <p>- feasible if payload is <300 g</p> <p>- not feasible</p> <p>- ALNavigation</p> <p>- ALVisionRecognition, ALCloseObjectDetection, ALNavigation</p> <p>- ALMotion</p> <p>- ALAudioPlayer</p> <p>For external devices, It could be achieved with a specific communication protocol</p> <p>- It could be achieved with a specific communication protocol</p> <p>- ALLeds, ALRobotPosture, ALAnimationPlayer</p>
<p>Left: Robot perceptual capabilities required</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>P1. Locate persons (distance and position) (A1,A5,A7)</p> <p>P2. Recognize emotions (A1)</p> <p>P3. Recognize actions (A10,A11)</p> <p>P4. Recognize persons / faces (A1)</p> <p>P5. Recognize obstacles / uneven ground (A4,A5,A7)</p> <p>P6. Recognize/ Locate items (A4,A6,A7)</p> <p>P7. Retrieve / store information (A2,A8,A11,A12)</p> <p>P8. Recognize dialogue context (A10)</p>	<p>- ALPeoplePerception</p> <p>- ALMood</p> <p>- no dedicated module, it could be achieved with external libraries</p> <p>- ALFaceDetection</p> <p>- ALLaser, ALSonar</p> <p>- ALVisionRecognition</p> <p>- ALMemory</p> <p>- ALSpeechRecognition</p>

	P9. Keep track of time (A8)	- no dedicated module, it could be achieved with different solutions
Left: Robot verbal capabilities involved Right: Corresponding Pepper API (if any)	V1. Ask Yes/ No questions (A10) V2. Ask multiple choice questions (A1,A10) V3. Suggest / remind (A2,A8) V4. Context dependent chat (A3,A9,A10,A11) V5. Greet (A1) V6. Encourage/ praise (A3,A11) V7. Report information (A2,A12)	- ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech - ALDialog, ALTextToSpeech, ALTabletService - ALMemory, ALTextToSpeech, ALTabletService
Which “qualitative” robot behavior is expected to be culturally dependent	R1. Polite way of asking and interacting R2. Waits for her instructions R3. Awareness of Mr C eating preferences R4. Awareness of where Mr C likes to take his breakfast R5. Preferences of news/radio channels	
Which behavior is “quantitatively” different depending con culture (volume and tone of voice, distance, velocity, etc)	T1. Speaks with soft tone T2. Speaks in low volume T3. Walks in low speed	

2.2 MR CHATERJEE – MORNING ROUTINE, DRESSING

Scenario name	Mr Chaterjee – Morning routine, Dressing	
Time of the day	Morning	
General Description	<p><.....> After his friend leaves he goes to his bedroom to properly dress up. He puts on one of his comfortable kurtas¹ and a pair of regular trousers. He wears a comfortable fleece jacket that his son presented, raps a woolen muffler around his neck and puts on a hat. His children tend to tease him when seeing him wearing a hat inside the house but for him this is the only way to stay warm.</p> <p>He likes to wear both western and Indian traditional clothes. He has nice suits , shirts, sweaters, ties and nice tailored trousers but also nice silk Punjabis, Nehru jackets², and dhotis³. When he is attending an Indian wedding he always likes to wear a silk dhoti and kurta as his late wife who had a beautiful selection of saris.</p>	<p>1. kurtas</p>  <p>2. Nehru jacket</p>  <p><i>'The Nehru jacket is a hip-length tailored coat for men or women, with a mandarin collar, and with its front modelled on the Indian achkan or sherwani, a garment worn by Jawaharlal Nehru, the Prime Minister of India from 1947 to 1964' (Wikipedia)</i></p> <p>3. Dhoti is a rectangular piece of unstitched</p>

		<i>cloth, usually around 4.5 metres (15 ft) long, wrapped around the waist and the legs and knotted at the waist.</i>
Functional areas of the house involved	F1. Bedroom - Bed F2. Bedroom – Wardrobe F3. Bedroom – Drawers F4. Bedroom - dressing table	
Relevant objects involved	O1. Kurtas, Punjabis, Nehru jackets, dhotis O2. Western clothes, shirts, trousers, fleese jacket, O3. Mufflers O4. After shave	
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 Mr C to wear his kurta and fleese jacket H2. Praise Mr C for carefully choosing his clothes H3. Suggesting to H4. Help Mrs C to choose kurta, trouser H5. Help him find the muffler and hat	
Cultural knowledge involved (top level concepts in the Cultural Knowledge hierarchy)	C1. Hindu morning routine C2. Hindu dressing	
Which “qualitative” caregiver behavior is expected to be culturally dependent	D1. Distance kept by caregiver from Mr C is a parameter that depends on culture D2. The way of praising depends on culture and current emotion D3. Pieces of clothing have differet names in different cultures D4. Remember his favourite clothes and colour and which pieces of clothing were presents from his children	
Which behavior is “quantitatively” different depending con culture (volume and tone of voice, distance, velocity, etc.)	E1. Polite and soft tone of voice E2. Not rushing Mr C	
Left: What the robot shall / can do in this scenario	A1. Locate objects if needed (kurta, trouser, fleese jacket, muffler, hat)) (M5,M8,P5,P6) [H]	A1'+A2'. Tell Mr C the location of the needed objects, knowing their

<p>Right: Alternative tasks</p>	<p>A2. Bring objects if needed (kurtam trouser, fleece jacket, muffler, hat)) (M2,M3,M4,M5,M6,M8,P1,P5) [H]</p> <p>A3. Recommend trouser and kurta(P4,P7,V1,V2,V3) [E]</p> <p>A4. Open wardrobe with clothes (M1,M2,M6,M7,M8,M9,P5,P6) [H]</p> <p>A5. Ask Mr C if he needs help while getting dressed (P2,P4,V1,V4) [E]</p> <p>A6. Help Mr C to wear his clothes sari, by holding them (M1,M2,M3,M6,M8,P1,P2,P5,P6) [E/H]</p> <p>A7. Switch on/off lights when asked (M10) [H]</p> <p>A8. Provide privacy to Mr C (M5,P4) [E]</p> <p>A9. Show interest and ask information about Hindu traditional dresses (M11,P7,V1,V2,V4) [E]</p> <p>A10. Make recommendations (traditions of India, special occasions, weather information) (P7,P8,V3,V4,V5) [E]</p> <p>A11. Praise Mr C for choosing nice clothes and maintaining a well-groomed apperance (M11,P3,V4,V5) [E] (P7,V3,V4) [E]</p>	<p>positions in the environment, or by using markers</p> <p>A2''. Permanently attach a tray to the robot's chest to bring objects</p> <p>A4'+A6'. Bring a hanger (on wheels) close to Mr C, and then bring it back to its place again.</p> <p>A4''. Open the wardrobe, by controlling its sliding doors in the smart environment</p> <p>A7'. Connect to automatic controls of lights.</p> <p>A10'. Talk with Mr C, asking questions related to the context and making appropriate recommendations</p>
<p>Left: Robot motor capabilities required Right: Corresponding Pepper API (if any)</p>	<p>M1. Coordinate move base/ arms/ hands (A4,A6)</p> <p>M2. Grasp objects (A2,A4,A6)</p> <p>M3. Carry lightweight items (A2,A6)</p> <p>M4. Carry heavyweight items (A2)</p> <p>M5. Navigate autonomously in the house (A1,A2,A8)</p> <p>M6. Reach a target / person (A2,A4,A6)</p> <p>M7. Pull objects (A4)</p> <p>M8. Avoid unexpected static or moving obstacles / persons (A1,A2,A4,A6)</p> <p>M9. Open doors / windows (by communicating with smart environment) (A4)</p> <p>M10. Operate appliance (by communicating with smart environment) (A7)</p> <p>M11. Show feelings (A9,A11)</p>	<ul style="list-style-type: none"> - AIMotion - no dedicated module, it could be achieved with external libraries - feasible if payload is <300 g - not feasible - ALNavigation - ALVisionRecognition, ALCloseObjectDetection, ALNavigation - no dedicated module, it could be achieved with external libraries - AIMotion - It could be achieved with a specific communication protocol - It could be achieved with a specific communication protocol - ALLeds, ALRobotPosture,

<p>Left: Robot perceptual capabilities required Right: Corresponding Pepper API (if any)</p>	<p>P1. Locate persons (distance and position) (A2,A6) P2. Recognize posture, gesture, movements (A5,A6) P3. Recognize emotions (A11) P4. Recognize actions (A3,A5,A8) P5. Recognize obstacles / uneven ground (A1,A2,A4,A6) P6. Recognize/ Locate items (A1,A4,A6) P7. Retrieve / store information (A3,A9,A10,A12) P8. Recognize weather/ temperature (A10)</p>	<p>ALAnimationPlayer</p> <ul style="list-style-type: none"> - AIPeoplePerception - no dedicated module, it could be achieved with external libraries - AIMood - no dedicated module, it could be achieved with external libraries - ALLaser, AISonar - AIVisionRecognition - AIMemory - no dedicated module, it could be checked the broadcast on internet or by communicating with the smart environment
<p>Left: Robot verbal capabilities involved Right: Corresponding Pepper API (if any)</p>	<p>V1. Ask Yes/ No questions (A3,A5,A9) V2. Ask multiple choice questions (A3,A9) V3. Suggest / remind (A3,A10,A12) V4. Context dependent chat (A5,A9,A10,A11,A12) V5. Encourage/ praise (A10,A11)</p>	<ul style="list-style-type: none"> - ALDialog, AISpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, AISpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, AITextToSpeech, ALTabletService - ALDialog, AISpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, AITextToSpeech, ALTabletService
<p>Which “qualitative” robot behavior is expected to be culturally dependent</p>	<p>R1. Way of dressing R2. Type of clothes depending for the occasion R3. May need to turn to face the wall or leave the room when Mr C is changing R4. Provide privacy</p>	
<p>Which behavior is “quantitatively” different depending con culture (volume and tone of voice, distance, velocity, etc)</p>	<p>T1. Speaks with soft tone T2. Speaks in low volume T3. Walks in low speed T4. Stands not too close to Mr C unless helping him with something T5. Frequency of reminders is not too high</p>	

2.3 MR CHATERJEE - PRE LUNCH ROUTINE, READING/AUDIO/TV/MUSIC

Scenario name	Mr Chaterjee - Pre Lunch routine, Reading/audio/tv/music	
Time of the day	mid-Morning	
General Description	<p><...> it is now mid-morning, Mr C finished his exercise and he would like to have a cup of tea and listen to the news. He will make a simple cup of tea (using tea bag) not the Indian way¹. He used to read the newspaper along with his wife but now because of his eye problems, he will put the radio on and listen to the news. he likes to put on BBC or the Bengali channel, or the Indian TV² channel news. Then he will listen for a while to his talking book. He will then talk with his children on the phone.... They have their regular time ... he or they will call every day.</p>	<ol style="list-style-type: none"> 1. <i>The Indian way of making tea is to boil tealeaves with spices such as cinnamon, clove, cardamom, with added sweetened milk</i> 2. <i>Indian TV channels /radio</i>
Functional areas of the house involved	<p>F1. kitchen F2. Bedroom or living room (depending where is the radio or TV and his chair)</p>	
Relevant objects involved	<p>O1. TV O2. Radio O3. Talking/audio book O4. Remote O5. Phone O6. Armchair O7. Tea bags O8. Tea cup O9. Kettle</p>	
Relevant persons (in addition to user and caregiver)	<p>P1. No-one</p>	
What a human (formal or informal) caregiver shall / can do in this scenario	<p>H1. Help him switch on the radio or TV and find the correct channel (channel of his choice) H2. Read to him or if he is having an audio book start it from where he left off. H3. Bring hm phone H4. Remind him to call or call family member H5. Carry his tea cup in the living room</p>	
Cultural knowledge involved	<p>C1. Appreciate the importance of Indian music and Indian TV programmes.</p>	

(top level concepts in the Cultural Knowledge hierarchy)	C2. Understand the importance of keeping in regular contact with hisfamily.	
Which “qualitative” caregiver behavior is expected to be culturally dependent	D1. Asking politely if he will need help with any of the activities (starting the TV or the radio, finding the channel) D2. Reminding him politely to call his daughter D3. Bring items and offering them gently D4. Privacy when talking with family	
Which behavior is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc.)	E1. Polite and soft tone of voice E2. Move slowly and gently in the house	
Left: What the robot shall / can do in this scenario Right: Alternative tasks	A1. Ask Mr C how he feels and if he wants a cup of tea (P1,P2,P4,P7,V1,V2) [E] A2. Remind Mr C that his TV show is on (P7,P8,V3,V7) [E] A3. Switch on/off TV/radio and put the correct channel/volume (M7,M8) [H] A4. Locate objects as needed (remote, tea bags, cup, phone) (M4,M6,P5,P6) [H] A5. Bring objects as needed (remote, tea bags, cup, phone) (M1,M2,M4,M5,M6,P1,P5) [H] A6. Prepare a tray with tea cup (M1,M2,P6) [H] A7. Bring the tray to Mr C (M1,M3,M4,M5,M6,P1,P5,P6) [H] A8. Read Mr C his audiobook (M9,V3,V5) [E] A9. Comment about how enjoying is reading and ask Mr C to choose his next book from the catalogue (M9,P2,P7,V4,V6,V7) [E] A10. Remind Mr C to call his daughter (P3,P7,V3,V6) [E] A11. Ask Mr C if he wants to use skype/facetime instead (V2,V3) [E] A12. Place a skype/phone call, saying “please hold on” and then asking MrsC to talk (M8,P7,V4,V6,V8) [E]	A3'. Connect to internet radio and let Mr C listen to his favorite radio program via the Pepper’s loudspeakers. A3''. Connect to internet radio TV and let Mr C watch his favorite TV program via the Pepper’s screen. A3'''. Connect to internet newspaper, and read the titles to Mr C. After each title, ask Mr C if he wants to hear the full story. A4'+A5'. Tell Mr C the positions of needed objects in the environment, knowing them a priori, or detecting them by using markers. A6'+A7'. Locate and indicate objects needed for preparing the tray, knowing their position in the environment, or using markers. Then suggest Mr C to bring the tray with food to the table
Left: Robot motor	M1. Grasp objects (A5,A6,A7)	- no dedicated module, it could be

<p>capabilities required Right: Corresponding Pepper API (if any)</p>	<p>M2. Carry lightweight items (A5,A6) M3. Carry heavyweight items (A7) M4. Navigate autonomously in the house (A4,A5,A7) M5. Reach a target / person (A5,A7) M6. Avoid unexpected static or moving obstacles / persons (A4,A5,A7) M7. Turn on radio / TV /cassette player (A3) M8. Operate appliance (by communicating with smart environment) (A3,A12) M9. Show feelings (A8,A9)</p>	<p>achieved with external libraries - feasible if payload is <300 g - not feasible - ALNavigation - ALVisionRecognition, ALCloseObjectDetection, ALNavigation - ALMotion - ALAudioPlayer For external devices, It could be achieved with a specific communication protocol - It could be achieved with a specific communication protocol - ALLeds, ALRobotPosture, ALAnimationPlayer</p>
<p>Left: Robot perceptual capabilities required Right: Corresponding Pepper API (if any)</p>	<p>P1. Locate persons (distance and position) (A1,A5,A7) P2. Recognize emotions (A1,A9) P3. Recognize actions (A10) P4. Recognize persons / faces (A1) P5. Recognize obstacles / uneven ground (A4,A5,A7) P6. Recognize/ Locate items (A4,A6,A7) P7. Retrieve / store information (A1,A2,A9,A10,A12) P8. Keep track of time (A2)</p>	<p>- ALPeoplePerception - ALMood - no dedicated module, it could be achieved with external libraries - ALFaceDetection - ALLaser, ALSonar - ALVisionRecognition - ALMemory - no dedicated module, it could be achieved with different solutions</p>
<p>Left: Robot verbal capabilities involved Right: Corresponding Pepper API (if any)</p>	<p>V1. Ask Yes/ No questions (A1) V2. Ask multiple choice questions (A1,A11) V3. Suggest / remind (A2,A8,A10,A11) V4. Context dependent chat (A9,A12) V5. Read audiobook (A8)</p>	<p>- ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALTextToSpeech, ALAudioPlayer</p>

	<p>V6. Encourage/ praise (A9,A10,A12)</p> <p>V7. Report information (A2,A9)</p> <p>V8. Place a phone call (A12)</p>	<p>- ALDialog, ALTextToSpeech, ALTabletService</p> <p>- ALMemory, ALTextToSpeech, ALTabletService</p> <p>- ALTabletService, or it could be achieved with a specific communication protocol</p>
Which “qualitative” robot behavior is expected to be culturally dependent	<p>R1. Privacy when talking with family</p> <p>R2. Reminding him politely to call his daughter</p>	
Which behavior is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc)	<p>T1. Speaks with soft tone</p> <p>T2. Speaks in low volume</p> <p>T3. Walks in low speed</p> <p>T4. Stands not too close to Mr C</p> <p>T5. Reads at a steady pace</p>	

2.4 MR CHATERJEE - PRE LUNCH ROUTINE, PRAY

Scenario name	Mr Chaterjee - Pre lunch routine, Pray	
Time of the day	Pre-lunch time	
General Description	<p><....> After dressing Mr C will light a scented stick to Lord Ganesha¹ and pray for the removal of obstacles and health for all her family. He has in the corner of his bedroom, a small table with a couple small statues of Ganesha, Shiva and Durga²</p> <p>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. He will spend there a few minutes, standing or sitting on the floor, with his hands in 'namaste'³.</p> <p>He may also want to pray for blessings for family members and close friends - birthdays/wedding anniversaries/death anniversaries etc</p>	<p>1. The 'elephant' God the patron of art and sciences and the removal of obstacles</p> <p>2. 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.</p> <p>3. '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.</p>
Functional areas of the house involved	F1. bedroom	
Relevant objects involved	<p>O1. Small table with statues</p> <p>O2. Scented sticks</p> <p>O3. Matches</p> <p>O4. Special scented stick holder</p> <p>O5. Small tray</p> <p>O6. Little brass bell</p> <p>O7. Small candle holder</p>	
Relevant persons (in addition to user and caregiver)	B1. No-one	
What a human (formal or informal) caregiver shall / can do in this scenario	<p>H1. Possibly assist with lighting the scented stick and getting them if kept in different room?</p> <p>H2. Assist with sitting on the floor and getting up</p> <p>H3. Pray with hm</p> <p>H4. Chanting</p> <p>H5. Reading</p> <p>H6. Keeping quiet during prayer</p>	

	H7. Responding to Mr C's needs during prayer e.g helping change his position H8. Play recorded appropriate music/chant if asked by Mr C	
Cultural knowledge involved (top level concepts in the Cultural Knowledge hierarchy)	C1. Hindu way of praying: a) To whom - Gods e.g Ganesha b) How – the process /behaviour e.g sitting, Namaste, chanting, listening to music, reading prayers c) What – the objects used e.g candles, incense, flower pedals C2. Maintaining the designated praying area in the room	
Which “qualitative” caregiver behavior is expected to be culturally dependent	D1. (If carer non-Hindu) show interest in learning about Hinduism and customs during prayer D2. Knowing the time of the day for praying D3. Knowing how long the person normally prays D4. Helping person's position during praying D5. Maintaining Mr C 's privacy and silence D6. Show respect for the customs and process of the prayer D7. Ask Mr C how he feels after the prayer	
Which behavior is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc.)	E1. Polite and soft tone of voice E2. Speak softly whilst helping with preparation for prayer E3. Move gently in the room E4. Keep acceptable distance from Mr C E5. Speaking softly, ask Mr C how he feels after the prayer	
Left: What the robot shall / can do in this scenario Right: Alternative tasks	A1. Show interest in Mr C' praying customs by asking him questions about his religion (e.g Names of Gods, names of the statues he has, why he uses scented sticks and candles, how long he normally prays for, how many times a day etc) (M11,P4,P9,V2,V4) [E] A2. Remind Mr C of religious occasions, or that he may also want to pray for blessings for family members and close friends - birthdays/wedding anniversaries/death anniversaries etc (P9,V3,V5,V6) [E] A3. Ask him whether he would like to pray or light a scented stick (V1,V2) [E] A4. Ask Mr C if he needs anything or if he wants it to leave the room (V1,V2) [E] A5. If in the room, provide privacy, observing Mr C quietly during prayer (M4,M5,P4) [E] A6. Assist Mr C to stand or sit (M3,M6,P1,P2,P4) [H]	A6'. Suggest Mr C that he can put some objects in the robot hands or in a tray permanently attached to the robot's chest while he is standing or sitting. A7'+A8'. Tell Mr C the positions of needed objects in the environment, knowing them a priori, or detecting them by using markers. A10'. Check smoke sensor in the environment. In case, suggest Mr C to open the window A14'. Suggest Mr C to drink a glass of water A15'. Provide general comments about religion.

	<p>A7. Locate things as needed (scented stick holder, box of scented sticks, matches) (M4,M7,P5,P6) [H]</p> <p>A8. Bring things as needed (scented stick holder, box of scented sticks, matches) (M1,M2,M4,M6,M7,P1,P5) [H]</p> <p>A9. Remind Mr C to check that there are no flames etc (P7,V3) [E]</p> <p>A10. Open window if smoke or scent too strong (P8,M9) [H]</p> <p>A11. Ask Mr C if he is comfortable or if he needs anything else to make him comfortable (P2,V1,V2) [E]</p> <p>A12. Play recorded appropriate music/chant if asked by Mr C (M8,M10,P9) [E]</p> <p>A13. Ask Mr C if he needs help to get up when he finishes praying (P2,P4,V1) [E]</p> <p>A14. Bring Mr C a glass of water to drink at the end of praying (M1,M2,M4,M6,M7,P1,P5,P6) [H]</p> <p>A15. Comment on Mr C chanting and on his peaceful appearance after praying, asking him how he feels after praying. (M11,P3,P4,V2,V4) [H]</p>	
<p>Left: Robot motor capabilities required Right: Corresponding Pepper API (if any)</p>	<p>M1. Grasp objects (A8,A14)</p> <p>M2. Carry lightweight items (A8,A14)</p> <p>M3. Support for equilibrium/standing/sitting (A6)</p> <p>M4. Navigate autonomously in the house (A5,A7,A8,A14)</p> <p>M5. Track moving objects / persons (A5)</p> <p>M6. Reach a target / person (A6,A8,14)</p> <p>M7. Avoid unexpected static or moving obstacles / persons (A7,A8,A14)</p> <p>M8. Turn on radio / TV /cassette player (A12)</p>	<ul style="list-style-type: none"> - no dedicated module, it could be achieved with external libraries - feasible if payload is <300 g - not feasible - ALNavigation - ALLandmarkDetection, ALColorBlobDetection, ALVisionRecognition, ALCloseObjectDetection - ALVisionRecognition, ALCloseObjectDetection, ALNavigation - ALMotion - ALAudioPlayer <p>For external devices, It could be achieved with a specific communication protocol</p>

	<p>M9. Open doors / windows (by communicating with smart environment) (A10)</p> <p>M10. Operate appliance (by communicating with smart environment) (A12)</p> <p>M11. Show feelings (A1,A15)</p>	<ul style="list-style-type: none"> - It could be achieved with a specific communication protocol - It could be achieved with a specific communication protocol - ALLeds, ALRobotPosture, ALAnimationPlayer
<p>Left: Robot perceptual capabilities required Right: Corresponding Pepper API (if any)</p>	<p>P1. Locate persons (distance and position) (A6,A8,A14)</p> <p>P2. Recognize posture, gesture, movements (A6,A11,A13)</p> <p>P3. Recognize emotions (A15)</p> <p>P4. Recognize actions (A1,A5,A6,A13,A15)</p> <p>P5. Recognize obstacles / uneven ground (A7,A8,A14)</p> <p>P6. Recognize/ Locate items (A7,14)</p> <p>P7. Recognize fire / flame (A9)</p> <p>P8. Recognize level of smoke/ scent (A10)</p> <p>P9. Retrieve / store information (A1,A2,A12)</p>	<ul style="list-style-type: none"> - ALPeoplePerception - no dedicated module, it could be achieved with external libraries - ALMood - no dedicated module, it could be achieved with external libraries - ALLaser, ALSonar - ALVisionRecognition - not feasible, it could be achieved by communicating with the smart environment using a specific protocol - not feasible, it could be achieved by communicating with the smart environment using a specific protocol - ALMemory
<p>Left: Robot verbal capabilities involved Right: Corresponding Pepper API (if any)</p>	<p>V1. Ask Yes/ No questions (A3,A4,A11,A13)</p> <p>V2. Ask multiple choice questions (A1,A3,A4,A11,A15)</p> <p>V3. Suggest / remind (A2,A9)</p> <p>V4. Context dependent chat (A1,A15)</p> <p>V5. Encourage/ praise (A2)</p> <p>V6. Report information (A2)</p>	<ul style="list-style-type: none"> - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech, ALTabletService - ALMemory, ALTextToSpeech, ALTabletService

<p>Which “qualitative” robot behavior is expected to be culturally dependent</p>	<ul style="list-style-type: none"> R1. Show interest in learning about Hinduism and customs during prayer R2. Robot should have access to relevant dates as he may also want to pray for blessings for family 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 Mr C ‘s privacy and silence R7. Show respect for the customs and process of the prayer R8. Ask Mr C how he feels after the prayer
<p>Which behavior is “quantitatively” different depending con culture (volume and tone of voice, distance, velocity, etc)</p>	<ul style="list-style-type: none"> T1. Speaks with soft tone whilst helping with preparation for prayer T2. Speaks with soft tone while asking Mr C how he feels after the prayer T3. Walks in low speed T4. Keeps acceptable distance from Mr C

2.5 MR CHATERJEE - LUNCH ROUTINE, EATING

Scenario name	Mr Chaterjee - Lunch routine, Eating	
Time of the day	Lunch time	
General Description	<p><....> Because of health problems (thyroid and high cholesterol) Mr C has normally a light lunch. Usually dhal ¹ and fish curry².</p> <p>He has prepared enough dhal and fish curry for lunch and dinner and has kept them in two containers. Instead of 'bhat'³ he will heat up 2 chapatis⁴. He will put in two smaller bowls of dhal, fish curry and warm them up. He will sit at the table and with his left hand, he will first serve the dhal, then the fish curry. He likes eating with his hand (right hand only, serving with left)⁵. He may have some cucumber also and some mango chutney. He will then have a glass of water and his medication for cholesterol.</p>	<p>1. lentils</p> <p>2. Bengalis are very fond of fish curry and they prefer to have it every day if possible.</p> <p>3. rice (basmati)</p> <p>4. round bread made of flour but it is not fried and can be made with wheat flour</p> <p>5. common way of eating. Indians actually say that you cannot enjoy the food if you don't eat with your hand.</p>
Functional areas of the house involved	<p>F1. Kitchen</p> <p>F2. Kitchen table</p> <p>F3. Or dining table in another room</p>	
Relevant objects involved	<p>O1. Brass utensils most probably brought from India</p> <p>O2. Plates/glass</p> <p>O3. Chairs/ stools</p>	
Relevant persons (in addition to user and caregiver)	<p>B1. No-one</p>	
What a human (formal or informal) caregiver shall / can do in this scenario	<p>H1. Assist with the warming of the food</p> <p>H2. Bring everything at the table</p> <p>H3. Serve</p> <p>H4. Keep company</p> <p>H5. Bring the medication</p> <p>H6. Ask Mr C if he likes some music in the background.</p> <p>H7. Wash the dishes</p>	
Cultural knowledge involved	<p>C1. Indian way of cooking</p>	

(top level concepts in the Cultural Knowledge hierarchy)	<p>C2. Utensils used in Indian cooking C3. Dietary preferences based on region of India, caste and religion C4. Way of eating (use of right hand) C5. Way of serving C6. Indian music C7. Order food is served</p>	
Which “qualitative” caregiver behavior is expected to be culturally dependent	<p>D1. Time of eating D2. Type of food D3. Order of having the food. For Bengalis, dhal is offered first, and then the vegetable, then chicken or fish curry, you finish with chutney. D4. Appropriate utensils used D5. Type of music D6. If a guest is having lunch with Mr C , the guest is expected to eat and be served or be offered food multiple times. In addition many more dishes will have been prepared. D7. Indirect questioning</p>	
Which behavior is “quantitatively” different depending con culture (volume and tone of voice, distance, velocity, etc.)	<p>E1. Polite and soft tone of voice E2. Unrushed walking and eating E3. Being silent when needed</p>	
<p>What the robot shall / can do in this scenario Right: Alternative tasks</p>	<p>A1. Recommend dishes (P4,P5,V3,V5) [E] A2. Provide recipes (P4,V4) [E] A3. Remind Mr C of needed groceries (P4,V3,V7) [E] A4. Locate things as needed (food, kitchen tools, medication) (M3,M5,P2,P3) [H] A5. Bring things as needed (food, kitchen tools, medication) to the table (M1,M2,M3,M4,M5,P1,P2) [H] A6. Praise on eating a healthy and balanced diet (V3,V5,V6) [E] A7. Suggest healthy food (e.g. salad) and to drink water (V5,V6) [E] A8. Keep company during lunch (V1,V2,V5) [E] A9. Remind him to take his medication (P4,V3) [E] A10. Comment on how ‘good’ the dishes look and congratulate him for his cooking abilities (M6,V5,V6) [H] A11. Ask Mr C if he wants to hear some music and in case play</p>	<p>A3’. Knowing the recipes given in A2, ask Mr C if each of the needed ingredients is present and create a list on the tablet A3’’. Ask Mr C if she wants to generate some reminders for missing ingredients A4’+A5’. Tell Mr C the positions of needed objects in the environment, knowing them a priori, or detecting them by using markers. A5’’. Permanently attach a tray to the robot’s chest to bring objects A10’. Provide general comments on dishes</p>

	Indian music (M7,M8,P6,V1) [H]	A11'. Ask Mr C if he wants to hear radio and the type of music. Then, reproduce the selected radio channel
Left: Robot motor capabilities required Right: Corresponding Pepper API (if any)	<p>M1. Grasp objects (A5)</p> <p>M2. Carry lightweight items (A5)</p> <p>M3. Navigate autonomously in the house (A4,A5)</p> <p>M4. Reach a target / person (A5)</p> <p>M5. Avoid unexpected static or moving obstacles / persons (A4,A5)</p> <p>M6. Show feelings (A10)</p> <p>M7. Turn on radio / TV / cassette player (A11)</p> <p>M8. Operate appliance (by communicating with smart environment) (A11)</p>	<p>- no dedicated module, it could be achieved with external libraries</p> <p>- feasible if payload is <300 g</p> <p>- ALNavigation</p> <p>- ALVisionRecognition, ALCloseObjectDetection, ALNavigation</p> <p>- ALMotion</p> <p>- ALLeds, ALRobotPosture, ALAnimationPlayer</p> <p>- ALAudioPlayer</p> <p>For external devices, It could be achieved with a specific communication protocol</p> <p>- It could be achieved with a specific communication protocol</p>
Left: Robot perceptual capabilities required Right: Corresponding Pepper API (if any)	<p>P1. Locate persons (distance and position) (A5)</p> <p>P2. Recognize obstacles / uneven ground (A4,A5)</p> <p>P3. Recognize/ Locate items (A4)</p> <p>P4. Retrieve / store information (A1,A2,A3,A9)</p> <p>P5. Recognize persons / faces (A1)</p> <p>P6. Recognize actions (A11)</p>	<p>- ALPeoplePerception</p> <p>- ALLaser, ALSonar</p> <p>- ALVisionRecognition</p> <p>- ALMemory</p> <p>- ALFaceDetection</p> <p>- no dedicated module, it could be achieved with external libraries</p>
Left: Robot verbal capabilities involved Right: Corresponding Pepper API (if any)	<p>V1. Ask Yes/ No questions (A8,A11)</p> <p>V2. Ask multiple choice questions (A8)</p> <p>V3. Suggest / remind (A1,A3,A6,A9)</p> <p>V4. List instructions (A2)</p>	<p>- ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService</p> <p>- ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService</p> <p>- ALDialog, ALTextToSpeech, ALTabletService</p> <p>- ALDialog, ALTextToSpeech,</p>

	<p>V5. Context dependent chat (A1,A6,A7,A8,A10)</p> <p>V6. Encourage/ praise (A6,A7,A10)</p> <p>V7. Report information (A3)</p>	<p>ALTabletService</p> <p>- ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService</p> <p>- ALDialog, ALTextToSpeech, ALTabletService</p> <p>- ALMemory, ALTextToSpeech, ALTabletService</p>
Which “qualitative” robot behavior is expected to be culturally dependent	<p>R1. Way of serving</p> <p>R2. Being discreet</p> <p>R3. Being silent when elders are speaking</p> <p>R4. Asks indirect questions</p>	
Which behavior is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc)	<p>T1. Speaks with soft tone</p> <p>T2. Speaks in low volume</p> <p>T3. Walks in low speed</p> <p>T4. Stands not too close to Mr C</p>	

2.6 MR CHATERJEE - AFTER LUNCH ROUTINE, NAP AND MEDITATION

Scenario name	Mr Chaterjee - After Lunch routine, Nap and meditation	
Time of the day	Early afternoon	
General Description	<p><...> after his light lunch Mr C is sitting comfortably in his armchair in the living room. The radio is on at the background he has his feet on a stool and he is covered by his favourite soft blanket. He closes his eyes and meditates¹ for a while. He soon falls asleep.</p> <p>After half hour he wakes up refreshed and looks for his slippers; he puts them on and takes a look outside.....</p>	<p><i>1. He may slowly reciting the name of Durga with a suitable mantra at every bead of the Japa Mala she holds in her hands (Japa Mala is a praying string of beads made out of 108 beads and she may recite the name of the God that she believes in eg most Bengalis probably pray to Durga and Ganesh)</i></p> <p><i>He may also say slowly the words: Buddham Sharanam Gacchami (a Buddhist mantra) even though she is a Hindu.</i></p>
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 his nap but keep track of time H2. If he usually takes a nap for 30 minutes, make sure that he gently wakes up and don't let him stay in the chair for hours. H3. Bring his Japa Mala (praying string of beads) If he has one and he uses it for meditation H4. Reminder him where his Japa Mala is located if he doesn't remember H5. Help him put the slippers on H6. Know whether he uses a cd or specific music for mediation	
Cultural knowledge involved (top level concepts in the Cultural Knowledge hierarchy)	C1. Use of words in Hindi C2. Indian meditation and how is performed C3. The significance of the praying string C4. Knowledge regarding the number of beads	

Which “qualitative” caregiver behavior is expected to be culturally dependent	<p>D1. Personal space - Distance from Mr C</p> <p>D2. Bringing the Japa Mala to Mr C</p> <p>D3. Maintaining a quiet environment</p>	
Which behavior is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc.)	<p>E1. Polite and soft tone, low volume of voice</p> <p>E2. Moving about in calm slow manner</p> <p>E3. Gestures are gentle and not too exaggerated</p>	
<p>Left: What the robot shall / can do in this scenario</p> <p>Right: Alternative tasks</p>	<p>A1. Walk towards Mr C (M4,M5,M7,P1,P5,P6) [E]</p> <p>A2. Ask Mr C if he would like to meditate (P2,P3,V1) [E]</p> <p>A3. Ask Mr C if he would like the radio on, off, or meditation music (V2) [E]</p> <p>A4. Put on appropriate meditation music if needed (M8,M9) [E]</p> <p>A5. Locate the stool and help in moving it close to the armchair (M1,M5,M6,P7) [H]</p> <p>A6. Locate things as needed (blanket, praying beads, slippers) (M4,M7,P6,P7) [H]</p> <p>A7. Bring things as needed (blanket, praying beads, slippers) (M2,M3,M4,M5,M7,P1,P6) [H]</p> <p>A8. Ask Mr C if she prefer to be woken up after some time (P4,P8,V1) [E]</p> <p>A9. Keep track of time and eventually gently wake up Mr C if he sleeps for more than the required time (P2,P4,P9,V4) [E]</p> <p>A10. Remind Mr C to move (V4) [E]</p> <p>A11. Show interest on Mr C meditation routine and ask information about it (if the robot does not have these information) (M10,P8,V1,V2,V3) [E]</p>	<p>A5’-A7’. Tell Mr C the positions of needed objects in the environment, knowing them a priori, or detecting them by using markers.</p> <p>A7’’. Permanently attach a tray to the robot’s chest to bring objects</p>
<p>Left: Robot motor capabilities required</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>M1. Coordinately move base/ arms/ hands (A5)</p> <p>M2. Grasp objects (A7)</p> <p>M3. Carry lightweight items (A7)</p> <p>M4. Navigate autonomously in the house (A1,A6,A7)</p> <p>M5. Reach a target / person (A1,A5,A7)</p>	<ul style="list-style-type: none"> - ALMotion - no dedicated module, it could be achieved with external libraries - feasible if payload is <300 g - ALNavigation - ALVisionRecognition, ALCloseObjectDetection,

	<p>M6. Push objects (A5)</p> <p>M7. Avoid unexpected static or moving obstacles / persons (A1,A6,A7)</p> <p>M8. Turn on radio / TV /cassette player (A4)</p> <p>M9. Operate appliance (by communicating with smart environment) (A4)</p> <p>M10. Show feelings (A11)</p>	<p>ALNavigation</p> <ul style="list-style-type: none"> - no dedicated module, the safety module should be deactivated - ALMotion - ALAudioPlayer <p>For external devices, It could be achieved with a specific communication protocol</p> <ul style="list-style-type: none"> - It could be achieved with a specific communication protocol - ALLeds, ALRobotPosture, ALAnimationPlayer ALMotion
<p>Left: Robot perceptual capabilities required</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>P1. Locate persons (distance and position)) (A1,A7)</p> <p>P2. Recognize posture, gesture, movements (A2,A9)</p> <p>P3. Recognize emotions (A2)</p> <p>P4. Recognize actions (A8,A9)</p> <p>P5. Recognize persons / faces (A1)</p> <p>P6. Recognize obstacles / uneven ground (A1,A6,A7)</p> <p>P7. Recognize/ Locate items (A5,A6)</p> <p>P8. Retrieve / store information (A8,A11)</p> <p>P9. Keep track of time (A9)</p>	<ul style="list-style-type: none"> - ALPeoplePerception - no dedicated module, it could be achieved with external libraries - ALMood - no dedicated module, it could be achieved with external libraries - ALFaceDetection - ALLaser, ALSonar - ALVisionRecognition - ALMemory - no dedicated module, it could be achieved with different solutions
<p>Left: Robot verbal capabilities involved</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>V5. Ask Yes/ No questions (A2,A8,A11)</p> <p>V6. Ask multiple choice questions (A3,A11)</p> <p>V7. Context dependent chat (A11)</p> <p>V8. Encourage/ praise (A9,A10)</p>	<ul style="list-style-type: none"> - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech, ALTabletService
<p>Which “qualitative” robot behavior is expected to be</p>	<p>R1. Bringing the Japa Mala to Mr C</p> <p>R2. Maintaining a quiet environment for meditation</p>	

culturally dependent	R3. Do not touch
Which behavior is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc)	T1. Speaks with soft tone T2. Speaks in low volume T3. Walks in low speed T4. Stands not too close to Mr C T5. Not too many gestures

2.7 MR CHATERJEE - AFTER LUNCH ROUTINE, EXERCISE AND AFTERNOON TEA

Scenario name	Mr Chaterjee - After Lunch routine, Exercise and afternoon tea	
Time of the day	Early afternoon	
General Description	<p><...> After napping for half hour Mr C wakes up refreshed and looks for his slippers; he puts them on and takes a look outside. Although his vision is not very good he can see that it is not raining and he has been told by his carer that it is not too cold outside today. He has accepted his visual impairment as a result of Karma³. Since he likes walking he decides to go for a short walk in the garden. He struggles to put his coat on and grabs his walking stick which is hanging by the door.</p> <p>After his nice walk, it is time for some tea¹. He takes care not to pour hot water over his hands by mistake. He likes to have his tea with some tea biscuits or cake² brought by his son in his last visit.</p>	<p><i>1.He boils the water, puts in some spices such as cinnamon and a couple of cloves, some sugar, milk and tea leafs. He lets it boil and then turns off the heat and lets it brew.</i></p> <p><i>2.Fruit cake, made with different dried fruits and almonds.</i></p> <p><i>3.Karma refers to actions from previous existence determining the future state of a person. Similar to fate.</i></p>
Functional areas of the house involved	<p>F1. Living room</p> <p>F2. Kitchen</p> <p>F3. Outside areas of the house (garden)</p>	
Relevant objects involved	<p>O1. Walking stick</p> <p>O2. Slippers</p> <p>O3. Shoes</p> <p>O4. Coat and hat</p> <p>O5. Coat stand</p> <p>O6. Teapot</p> <p>O7. Cups</p> <p>O8. Tea</p> <p>O9. Spices</p> <p>O10. Indian cake</p>	
Relevant persons (in addition to user and	<p>B1. No-one</p>	

caregiver)		
What a human (formal or informal) caregiver shall / can do in this scenario	<p>H1. Help him put the slippers on/OFF</p> <p>H2. Information about the weather</p> <p>H3. Encourage him to go for walk</p> <p>H4. Help him put on his shoes, or give the shoes</p> <p>H5. Help him put on his coat, and hat</p> <p>H6. Accompany him to the walk</p> <p>H7. Warning as they walk of uneven pavement or steps (prevent fall due to poor eyesight)</p> <p>H8. Assist with making the tea</p> <p>H9. Bring the cakes/tea biscuits</p> <p>H10. Keep company, e.g. talk about his son</p>	
Cultural knowledge involved (top level concepts in the Cultural Knowledge hierarchy)	<p>C1. Indian way of making tea</p> <p>C2. Indian snacks and sweets</p> <p>C3. Use of words in Hindi</p> <p>C4. Understanding the belief in Karma</p>	
Which “qualitative” caregiver behavior is expected to be culturally dependent	<p>D1. Able to prepare Indian tea</p> <p>D2. Motivating exercising as part of living a healthy life</p> <p>D3. Being compassionate to Mr C whilst walking with him in the garden aiming at preserving his dignity</p> <p>D4. Allow Mr C to hold your arm for his safety</p> <p>D5. Know when to be close and when to keep your distance</p>	
Which behavior is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc.)	<p>E1. Polite and soft tone, low volume of voice</p> <p>E2. Moving about in calm slow manner</p> <p>E3. Gestures are gentle and not too exaggerated</p>	
Left: What the robot shall / can do in this scenario Right: Alternative tasks	<p>A1. Help Mr C to put coat on (M1,M2,M3,M8,P1,P2,P7,P12) [H]</p> <p>A2. Locate things as needed (reading glasses, shoes, slippers, coat, hat, walking stick, cup, biscuits, cake) (M5,M10,P6,P7) [H]</p> <p>A3. Bring things as needed (reading glasses, shoes, slippers, coat, hat, walking stick, cup, biscuits, cake) (M2,M3,M5,M8,M10,P1,P6) [H]</p> <p>A4. Provide information about the weather (P8,P10,V5)</p>	<p>A1'. Bring a coat hanger (which has wheels) to Mr C, and then bring it back to its place.</p> <p>A2'+A3'. Tell Mr C the positions of needed objects in the environment, knowing them a priori, or detecting them by using markers.</p> <p>A3''. Permanently attach a tray to the robot's chest to bring objects</p>

	<p>[E]</p> <p>A5. Suggest a walk and accompany him during the walk (M6,M7,M10,M11,P4,V1,V2,V4) [H]</p> <p>A6. Comment on the flowers and suggest Mr C to look at a bird when one is in view (M12,P7,V2,V3) [H]</p> <p>A7. Remind him to be careful (P6,V2) [E]</p> <p>A8. Count the steps Mr C is taking and compare with the number of steps he did in previous days (P5,P8) [H]</p> <p>A9. Scan the garden and informs Mr C when he is approaching a dip or uneven surface (M9,M10,P6,V2,V5) [H]</p> <p>A10. Take pictures /selfies near the flowers (P11) [H]</p> <p>A11. Provide encouragement and praise (M12,P3,V3,V4) [E]</p> <p>A12. Suggest that they could return to the house (P5,P9,V1,V2) [E]</p> <p>A13. Hold tray with cake on it (M1,M4,P7) [H]</p>	<p>A5'+A9'. Suggest a walk, waiting at home</p> <p>A6''. Talk about typical flowers and birds that could be seen given the time of the year.</p> <p>A8''. Keep track of time and provide comments and comparisons.</p> <p>A8'''. Use a wearable device worn by Mr C (watch, accelerometer) to compute steps and movements, and provide comments.</p> <p>A9''. Periodically remind Mr C to pay attention to the ground</p> <p>A10'. Take pictures of Mr C.</p> <p>A10''. Ask Mr C if he wants to take a picture (to send to his children?), and if so, indicate by his arm what should be in the picture.</p> <p>A13'. Suggest Mr C to bring the tray with cake</p>
<p>Left: Robot motor capabilities required Right: Corresponding Pepper API (if any)</p>	<p>M1. Coordinately move base/ arms/ hands (A1,A13)</p> <p>M2. Grasp objects (A1,A3)</p> <p>M3. Carry lightweight items (A1,A3)</p> <p>M4. Carry heavyweight items (A13)</p> <p>M5. Navigate autonomously in the house (A2,A3)</p> <p>M6. Track moving objects / persons (A5)</p> <p>M7. Follow moving objects / persons (A5)</p> <p>M8. Reach a target / person (A1,A3)</p>	<ul style="list-style-type: none"> - ALMotion - no dedicated module, it could be achieved with external libraries - feasible if payload is <300 g - not feasible - ALNavigation - ALLandmarkDetection, ALColorBlobDetection, ALVisionRecognition, ALCloseObjectDetection - ALVisionRecognition, ALCloseObjectDetection, ALNavigation - ALVisionRecognition, ALCloseObjectDetection,

	<p>M9. Move on uneven ground (A9)</p> <p>M10. Avoid unexpected static or moving obstacles / persons (A2,A3, A5,A9)</p> <p>M11. Open doors / windows (by communicating with smart environment) (A5)</p> <p>M12. Show feelings (A6,A11)</p>	<p>ALNavigation</p> <ul style="list-style-type: none"> - ALMotion - ALMotion - It could be achieved with a specific communication protocol - ALLeds, ALRobotPosture, ALAnimationPlayer
<p>Left: Robot perceptual capabilities required</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>P1. Locate persons (distance and position) (A1,A3)</p> <p>P2. Recognize posture, gesture, movements (A1)</p> <p>P3. Recognize emotions (A11)</p> <p>P4. Recognize actions (A5)</p> <p>P5. Detect human steps (A8,A12)</p> <p>P6. Recognize obstacles / uneven ground (A2,A3,A7,A9)</p> <p>P7. Recognize/ Locate items (A1,A2,A6,A13)</p> <p>P8. Retrieve / store information (A4,A8)</p> <p>P9. Keep track of time (A12)</p> <p>P10. Recognize weather/ temperature (A4)</p> <p>P11. Take pictures (A10)</p> <p>P12. Recognize persons / faces (A1)</p>	<ul style="list-style-type: none"> - ALPeoplePerception - no dedicated module, it could be achieved with external libraries - ALMood - no dedicated module, it could be achieved with external libraries - not feasible, it could be achieved by communicating with wearable sensors - ALLaser, ALSonar - ALVisionRecognition - ALMemory - no dedicated module, it could be achieved with different solutions - no dedicated module, it could be checked the broadcast on internet or by communicating with the smart environment - ALPhotoCapture - ALFaceDetection
<p>Left: Robot verbal capabilities involved</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>V1. Ask Yes/ No questions (A5,A12)</p> <p>V2. Suggest / remind (A5,A6,A7,A9,A12)</p> <p>V3. Context dependent chat (A6,A11)</p> <p>V4. Encourage/ praise (A5,A11)</p>	<ul style="list-style-type: none"> - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech, ALTabletService

	V5. Report information (A4,A9)	- ALMemory, ALTextToSpeech, ALTabletService
Which “qualitative” robot behavior is expected to be culturally dependent	R1. Way of greeting –slight bow, holds palms together R2. Able to prepare Indian tea R3. Motivating Mr C to exercise as part of living a healthy life R4. Being compassionate to Mr C whist walking with him in the garden aiming at preserving his dignity R5. Allow Mr C to hold its arm for his safety R6. Know when to be close and when to keep your distance R7. Do not touch	
Which behavior is “quantitatively” different depending con culture (volume and tone of voice, distance, velocity, etc)	T1. Speaks with soft tone T2. Speaks in low volume T3. Walks in low speed T4. Not too many gestures T5. Stands not too close to Mr C in the house	

2.8 MR CHATERJEE - AFTER LUNCH ROUTINE, SOCIAL ACTIVITIES (DRINKING TEA, VISITORS, TALKING)

Scenario name	Mr Chaterjee - After lunch routine, Social activities (drinking tea, visitors, talking)	
Time of the day	Afternoon	
General Description	<p><....> Today Mr C woke up with a little bit of cold. He calls his carer to help him make a hot drink. He would like to have some hot tea with ginger¹. He also asks for some cloves to chew², they are good for the sore throat. His good friend, comes over. Mr C is still in his pyjamas and robe but insists that his friend, Pranab, comes in to have at least a cup of tea.^{3,4}</p> <p>Mr C goes into his bedroom and asks his carer to find certain clothes. Since the deterioration of his eyesight it has been difficult for him to find quickly the things he needs. He gets dressed. They start chatting in Bengali⁵. Mr C asks his carer to bring out some snacks and sweets⁶. He also asks her to make sweet masala tea⁷, just the way his friend likes it. They sit comfortably and continue to chat. His friend has a daughter around 25 and he is getting worried about her marriage prospect. His friend asks Mr C's opinion about a good astrologer⁸ as he wants to consult the stars about her daughter's future.</p>	<ol style="list-style-type: none"> 1. Putting ginger in tea is believed to relief cold symptoms 2. Similarly with chewing cloves, especially when you have a sore throat. 3. Visitors are welcome and need to be treated nicely, offering a snack or tea or coffee. 4. 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. 5. Common to talk in native language 6. Products (chana chur) purchased from a local Indian shop 7. Indian way of making tea, usually, boil water, milk, some spices and tea leaves. 8. It is common to consult astrologers for the couple compatibility, dates for marriage ceremonies, etc.
Functional areas of the house involved	<p>F1. Living room</p> <p>F2. Kitchen – cabinets, refrigerator</p> <p>F3. Bedroom - Drawer</p>	
Relevant objects involved	<p>O1. Door</p> <p>O2. Cups,</p> <p>O3. Spoons</p> <p>O4. Plates</p> <p>O5. Packages of snacks, sweets</p>	
Relevant persons (in addition to user and	<p>B1. Friend</p>	

caregiver)		
What a human (formal or informal) caregiver shall / can do in this scenario	<ul style="list-style-type: none"> H1. Open the door for visitor and greet appropriately H2. Welcome the visitor H3. Ask whether he would like to take his coat off H4. Take his coat and hang it or place it to the appropriate place H5. Ask the visitor whether he would like something to drink H6. Help make the tea H7. Help in the kitchen by getting the cups, plates, sweets 	
Cultural knowledge involved (top level concepts in the Cultural Knowledge hierarchy)	<ul style="list-style-type: none"> C1. Indian way of making tea C2. Indian snacks and sweets C3. Ayurveda medicine - Home remedies for cold C4. Hindu dressing and accessories C5. Mr 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" caregiver behavior is expected to be culturally dependent	<ul style="list-style-type: none"> D1. Proper way of greeting and hospitality D2. Properly addressing the visitor D3. Properly addressing Mr C as kakou (uncle) D4. Distance from visitor and non-involvement in discussion D5. Finding the clothes Mr C wants to wear D6. Helping in the kitchen, knowing where things are kept D7. Makes the masala tea D8. Puts some chana chur in a bowl D9. Serves the tea and sweets to Mr C and his friend D10. Washes the cups and dishes D11. Touching not desirable for non-family members 	
Which behavior is "quantitatively" different depending on culture (volume and tone of voice, distance, velocity, etc.)	<ul style="list-style-type: none"> E1. Polite and soft tone of voice E2. Keep some distance for non-family members E3. Move gently and with low velocity E4. Smile 	
Left: What the robot shall /	A1. Ask Mr C how he is feeling and if he is warm enough	A6'. Show the visitor where to hang

<p>can do in this scenario Right: Alternative tasks</p>	<p>(P2,P4,V1,V2) [E] A2. Recommend Mr C having a tea with ginger for his cold (M10,V3,V4) [E] A3. Greet the visitor performing “Namaste” (M1,M6,M9,P4,V5) [E] A4. Ask the visitor to remove his shoes and leave them by the door (V1,V3) [E] A5. Ask the visitor whether he would like to take his coat off and whether he would like something to drink (V1,V2) [E] A6. Take and hang visitor’s coat (M2,M3,M4,M7,P1,P6) [H] A7. Provide privacy (M6,P3) [E] A8. Locate clothes for Mr C (M6,M8,P5,P6) [H] A9. Bring clothes to Mr C (M3,M4,M6,M7,M8,P1,P5) [H] A10. Ask Mr 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 Mr C if he needs to retrieve the astronomers’ details (V1,V3) [E] A14. Find the astronomer’s contact details (V6,P7) [E]</p>	<p>coat A8'+A9'. Tell Mr C the positions of needed objects in the environment, knowing them a priori, or detecting them by using markers. A11'+A12'. Locate and indicate objects needed for preparing the tray, knowing their position in the environment, or using markers. Suggest Mr C to bring the tray with food to the table A12''. Permanently attach a tray to the robot’s chest to bring objects</p>
<p>Left: Robot motor capabilities required Right: Corresponding Pepper API (if any)</p>	<p>M1. Coordinately move torso/ arms / hands (A3) M2. Coordinately move base / arms / hands (A6,A12) M3. Grasp objects (A6,A9,A12) M4. Carry lightweight items (A6,A9) M5. Carry heavyweight items (A12) M6. Navigate autonomously in the house (A3,A7,A8,A9,A11,A12) M7. Reach a target / person (A6,A9,A12) M8. Avoid unexpected static or moving obstacles / persons (A8,A9,A11,A12) M9. Open doors / windows (by communicating with smart environment) (A3)</p>	<p>- ALMotion - ALMotion - no dedicated module, it could be achieved with external libraries - feasible if payload is <300 g - not feasible - ALNavigation - ALVisionRecognition, ALCloseObjectDetection, ALNavigation - ALMotion - It could be achieved with a specific communication protocol</p>

	M10. Show feelings (A2)	- ALLeds, ALRobotPosture, ALAnimationPlayer
Left: Robot perceptual capabilities required Right: Corresponding Pepper API (if any)	P1. Locate persons (distance and position) (A6,A9,A12) P2. Recognize emotions (A1) P3. Recognize actions (A7) P4. Recognize persons / faces (A1,A3) P5. Recognize obstacles / uneven ground (A8,A9,A11,A12) P6. Recognize / locate items (A6,A8,A11) Retrieve / store information (A14)	- ALPeoplePerception - ALMood - no dedicated module, it could be achieved with external libraries - ALFaceDetection - ALLaser, ALSonar - ALVisionRecognition - ALMemory
Left: Robot verbal capabilities involved Right: Corresponding Pepper API (if any)	V1. Ask Yes / No questions (A1,A4,A5,A13) V2. Ask multiple choice questions (A1,A5,A10) V3. Suggest / remind (A2,A4,A13) V4. Context dependent chat (A2) V5. Greet (A3) V6. Report information (A14)	- ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech - ALMemory, ALTextToSpeech, ALTabletService
Which “qualitative” robot behavior is expected to be culturally dependent	R1. Proper way of greeting and hospitality R2. Properly addressing the visitor R3. Properly addressing Mr C, for example ‘kakou’ (uncle) R4. Distance from visitor and non-involvement in discussion R5. Finding the clothes Mr C wants to wear R6. Helping in the kitchen, knowing where things are kept R7. Carries the masala tea on a tray R8. Carries some chana chur in a bowl R9. Do not touch	
Which behavior is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc)	T1. Speaks with soft voice T1. Walks in a low speed T2. Keeps acceptable distance from the visitor T3. Smile frequently	

2.9 MR CHATERJEE - AFTER LUNCH ROUTINE, SON, SOCIAL ACTIVITY

Scenario name	Mr Chaterjee - After Lunch routine, Son, social activity	
Time of the day	Late afternoon	
General Description	<p><...> It is late afternoon now and his son just popped in to visit.</p> <p>He calls him 'Baba' ¹, bends to touch his feet, he touches his head, and they hug². He takes off his shoes³, leaves them close to the door and they go in.. They start talking about his day. He asks about his work and the children. He asks of what he did since he last visited. He shows him some of the latest photos on his smartphone from the children and family. He brings his glasses. They talk, and laugh. Then they take a selfie together and he also takes a photo of him. They like to talk about politics and the latest news from around the world.</p> <p>Before he leaves he helps him put his coat and hat on and takes him for a walk in the garden. He tells him, that walking and exercising is good for him. He likes it when his son is taking care of him and cares about him.</p> <p>He asks him when he will visit him again and he reminds him that next week is Diwali⁴ so he will be coming the day before Diwali to take him so that he can celebrate it with the family.</p> <p>He has to go now, they hug, he touches his head, gives him his blessing, and they say goodbye.</p>	<ol style="list-style-type: none"> 1. <i>Ways of calling father: Baba</i> 2. <i>Greetings</i> 3. <i>Entering the house</i> 4. <i>Indian festival of lights, usually in October or November, one of the biggest festivals, celebrating the light over darkness, the good over evil.</i>
Functional areas of the house involved	<p>F1. Living room or bed/living area</p> <p>F2. Outside areas of the house (garden) and entrance</p>	
Relevant objects involved	<p>O1. Sofa</p> <p>O2. Reading glasses</p> <p>O3. Walking stick</p> <p>O4. Shoes</p> <p>O5. Coat and hat</p> <p>O6. Coat stand</p> <p>O7. Smartphone</p>	
Relevant persons	<p>B1. Son (informal carer)</p>	



(in addition to user and caregiver)		
What a human (formal or informal) caregiver shall / can do in this scenario	<ul style="list-style-type: none"> H1. Encourage him to go for walk H2. Help him put on his shoes, or give the shoes H3. Help him put on his coat, and hat H4. Accompany him to the walk H5. Provide some privacy to father and son (formal carer) H6. Ask whether the son would like something to eat or drink H7. Stay back at the house H8. Keep company and talk about Diwali (informal carer) H9. Switch off the radio H10. Switch off lights as needed. 	
Cultural knowledge involved (top level concepts in the Cultural Knowledge hierarchy)	<ul style="list-style-type: none"> C1. Greeting customs C2. Level of communication and detail of exchange of information C3. Son /parent relationship in Indian culture 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” caregiver behavior is expected to be culturally dependent	<ul style="list-style-type: none"> D1. Way of greeting with non-family members D2. Distance from visitor and involvement in discussion by non-family D4. Father –son way of greeting, talking D5. Expression of compassion between father-son D6. Sharing details of everyday life D7. Touching not desirable for non-family members 	
Which behavior is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc.)	<ul style="list-style-type: none"> E1. Polite and soft tone, low volume of voice E2. Keep some distance for non-family members E3. Moving about in calm slow manner E4. Gestures are gentle and not too exaggerated 	
Left: What the robot shall / can do in this scenario Right: Alternative tasks	<ul style="list-style-type: none"> A1. Greet the visitor performing “Namaste” (M1,M9,M12,P5,V5) [E] A2. Ask the son whether he would like to take his coat off (V1) [E] A3. Take and hang son’s coat (M2,M3,M4,M9,P1,P7) [H] A4. Locate things as needed (reading glasses, shoes, coat, hat, 	<ul style="list-style-type: none"> A3’. Show the son where to hang coat A4’+A5’. Tell Mr C the positions of needed objects in the environment, knowing them a priori, or detecting them by using markers.

	<p>walking stick, sweets, cups) (M6,M10,P6,P7) [H]</p> <p>A5. Bring things as needed (reading glasses, shoes, coat, hat, walking stick, sweets, cups) (M3,M4,M6,M9,M10,P1,P6) [H]</p> <p>A6. Ask Mr C and son how it can help with the tea (V2,V4) [E]</p> <p>A7. Prepare and bring a tray with tea and sweets in the living room (M3,M4,M5,M6,M9,M10,P1,P6,P7) [H]</p> <p>A8. Provide privacy to father and son (M6,P4) [E]</p> <p>A9. Provide information about the weather (P10,V7) [E]</p> <p>A10. Suggest a walk and accompany them during the walk (M8,M10,P6,P9,V3,V6) [H]</p> <p>A11. Help Mr C to put coat on (M2,M3,M4,M9,P1,P2,P7) [H]</p> <p>A12. Switch off the radio (M11,M13) [H]</p> <p>A13. Switch off lights (M13,P4) [H]</p> <p>A14. Take a photo of father and son upon request (M7,P2,P5,P11) [E]</p> <p>A15. Ask Mr C how he felt about his son's visit (M14,P3,P8,V2,V4) [E]</p> <p>A16. Remind Mr C that the son will be coming again next week (P8,V3,V4,V7) [E]</p> <p>A17. Ask the son to enter the date/time of next visit on the touch screen (V1,V2,V4) [E]</p>	<p>A7'. Locate and indicate objects needed for preparing the tray, knowing their position in the environment, or using markers. Then suggest Mr C to bring the tray with food to the table</p> <p>A5''+A7''. Permanently attach a tray to the robot's chest to bring objects</p> <p>A10'. Suggest a walk.</p> <p>A10''. Suggest a walk.</p> <p>A11'. Indicate the position of the coat.</p> <p>A12'. Remind Mr C to switch off the radio</p> <p>A12''. Switch off the radio by connecting to the smart environment, or launching radio on its tablet</p> <p>A13'. Remind Mr C to switch off the lights</p> <p>A13''. Switch off the light by connecting to the smart environment.</p>
<p>Left: Robot motor capabilities required Right: Corresponding Pepper API (if any)</p>	<p>M1. Coordinately move torso/ arms/ hands (A1)</p> <p>M2. Coordinately move base/ arms/ hands (A3,A11)</p> <p>M3. Grasp objects (A3,A5,A7,A11)</p> <p>M4. Carry lightweight items (A3,A5,A7,A11)</p> <p>M5. Carry heavyweight items (A7)</p> <p>M6. Navigate autonomously in the house (A4,A5,A7,A8)</p> <p>M7. Track moving objects / persons (A14)</p> <p>M8. Follow moving objects / persons (A10)</p>	<ul style="list-style-type: none"> - ALMotion - ALMotion - no dedicated module, it could be achieved with external libraries - feasible if payload is <300 g - not feasible - ALNavigation - ALLandmarkDetection, ALColorBlobDetection, ALVisionRecognition, ALCloseObjectDetection - ALVisionRecognition, ALCloseObjectDetection, ALNavigation

	<p>M9. Reach a target / person (A1,A3,A5,A7,A11)</p> <p>M10. Avoid unexpected static or moving obstacles / persons (A4,A5,A7,A10)</p> <p>M11. Turn on /off radio / TV /cassette player (A12)</p> <p>M12. Open doors / windows (by communicating with smart environment) (A1)</p> <p>M13. Operate appliance (by communicating with smart environment) (A12,A13)</p> <p>M14. Show feelings (A15)</p>	<ul style="list-style-type: none"> - ALVisionRecognition, ALCloseObjectDetection, ALNavigation - ALMotion - ALAudioPlayer For external devices, It could be achieved with a specific communication protocol - It could be achieved with a specific communication protocol - It could be achieved with a specific communication protocol - ALLeds, ALRobotPosture, ALAnimationPlayer
<p>Left: Robot perceptual capabilities required Right: Corresponding Pepper API (if any)</p>	<p>P1. Locate persons (distance and position) (A3,A5,A7,A11)</p> <p>P2. Recognize posture, gesture, movements (A11,A14)</p> <p>P3. Recognize emotions (A15)</p> <p>P4. Recognize actions (A8,A13)</p> <p>P5. Recognize persons / faces (A1,A14)</p> <p>P6. Recognize obstacles / uneven ground (A4,A5,A7,A10)</p> <p>P7. Recognize/ Locate items (A3,A4,A7,A11)</p> <p>P8. Retrieve / store information (A15,A16)</p> <p>P9. Recognize dialogue context (A10)</p> <p>P10. Recognize weather/ temperature (A9)</p> <p>P11. Take pictures (A14)</p>	<ul style="list-style-type: none"> - ALPeoplePerception - no dedicated module, it could be achieved with external libraries - ALMood - no dedicated module, it could be achieved with external libraries - ALFaceDetection - ALLaser, ALSonar - ALVisionRecognition - ALMemory - ALSpeechRecognition - no dedicated module, it could be checked the broadcast on internet or by communicating with the smart environment - ALPhotoCapture
<p>Left: Robot verbal capabilities involved Right: Corresponding Pepper API (if any)</p>	<p>V1. Ask Yes/ No questions (A2,A17)</p> <p>V2. Ask multiple choice questions (A6,A15)</p> <p>V3. Suggest / remind (A10,A16,A17)</p>	<ul style="list-style-type: none"> - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech,

	<p>V4. Context dependent chat (A6,A15,A16,A17)</p> <p>V5. Greet (A1)</p> <p>V6. Encourage/ praise (A10)</p> <p>V7. Report information (A9,A16)</p>	<p>ALTabletService</p> <ul style="list-style-type: none"> - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech - ALDialog, ALTextToSpeech, ALTabletService - ALMemory, ALTextToSpeech, ALTabletService
Which “qualitative” robot behavior is expected to be culturally dependent	<p>R1. Way of greeting –slight bow holds palms together</p> <p>R2. Keeps out of mother-son way</p> <p>R3. Provides privacy</p>	
Which behavior is “quantitatively” different depending con culture (volume and tone of voice, distance, velocity, etc)	<p>T1. Speaks with soft tone</p> <p>T2. Speaks in low volume</p> <p>T3. Stands not too close to Mr C</p> <p>T4. Walks in low speed</p> <p>T5. Keeps acceptable distance from the visitor</p>	

2.10 MR CHATERJEE - PREPARING FOR DINNER, DINNER PLANNING

Scenario name	Mr Chaterjee - Preparing for dinner, Dinner planning	
Time of the day	Pre-dinner time	
General Description	<p><...> On Sunday his daughter, son in –law and granddaughter will be visiting for dinner. Now he needs to plan for dinner and he is very excited about the visit. He knows that his grandchildren appreciate Dadu’s cooking. He will make luchi puri¹. His grandaughther’s favourative dish along with a simple chicken with potatoes curry .</p> <p>He asks his carer to help with the organization. (Calling the stores, ordering, making sure he has all the spices he will need, the specific cooking oil and flour for the luchi.) Oh... he also needs to order sweets, some gulab jamun².</p>	<p>1. <i>Luchi puri, type of flat bread which is fried</i></p>  <p>2. <i>Indian sweet, main ingredients , milk, khoya and saffron.</i></p> 
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	B1. Store employee	

caregiver)	
What a human (formal or informal) caregiver shall / can do in this scenario	<p>H1. Remind him that he is having family over and he needs to plan</p> <p>H2. Discuss the menu</p> <p>H3. What is needed for the different dishes</p> <p>H4. Go through the kitchen cabinets and or refrigerator and check what is needed and what is missing</p> <p>H5. Make a list of the missing items</p> <p>H6. Bring the phone and phone book</p> <p>H7. Call the local Indian shops</p> <p>H8. Help in case he needs to find new phone numbers</p> <p>H9. Place the order</p> <p>H10. Help Mr C with cooking</p> <p>H11. Keep company</p> <p>H12. Offer to play music</p> <p>H13. Lay the table (cutlery not placed next to individual plate mats but in the middle of table for those who need them. Most eat with their right hand)</p>
Cultural knowledge involved (top level concepts in the Cultural Knowledge hierarchy)	<p>C1. Indian dishes from the different parts of India</p> <p>C2. Indian stores that source products from India</p> <p>C3. Names of different dishes</p> <p>C4. Names and uses of different utensils</p> <p>C5. Knowledge on Indian cooking</p> <p>C6. Knowledge of order of dishes to be served: start with dahl, then vegetable dishes, then chicken and fish curry, then sweets</p> <p>C7. Knowledge of favourite music and topics of conversation</p>
Which “qualitative” caregiver behavior is expected to be culturally dependent	<p>D1. Planning of dinner</p> <p>D2. Awareness about Indian stores and products</p> <p>D3. Possibility that products cannot be purchased from one store</p> <p>D4. Awareness: they may speak in native language during the phone interaction</p> <p>D5. If regular customer , interaction will be slightly different (tone of voice, warmer)</p> <p>D6. Indirect style of communication</p>
Which behavior is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc.)	<p>E1. Polite and soft tone, low volume of voice</p> <p>E2. Moving about in calm slow manner</p> <p>E3. Gestures are gentle and not too exaggerated</p> <p>E4. Being silent when an elder is talking</p>

<p>Left: What the robot shall / can do in this scenario Right: Alternative tasks</p>	<p>A1. Remind Mr C that he is having family for lunch (P6,P7,V3) [E] A2. Recommend dishes (P6,V3,V5) [E] A3. Provide recipes (P6,V4) [E] A4. Walk with Mr C as he goes through his cabinets and refrigerator (M6,M8,P1,P3,P4,V4,V5) [H] A5. Keep notes for Mr C (P6) [H] A6. Locate things as needed (phone, phone book, food, dishes, kitchen tools,..) (M5,M8,P4,P5) [H] A7. Bring things when needed (phone, phone book, dishes, kitchen tools) (M2,M3,M5,M7,M8,P1,P4) [H] A8. Ask Mr C if he needs any phone numbers (V1) [E] A9. Place a phone call, saying “please hold on” and then asking MrC to talk (P6,V7,V9) [H] A10. Store the information about the expected delivery of the ingredients and remind MrC about it. (P6,V3,V8) [H] A11. Ask Mr C if he is tired and suggest to have a rest for a while (P2,V1,V3) [E] A12. Ask Mr C information about his favourite foods and food preparation (M9,V2,V5) [E] A13. Help with laying the table (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] A15. Suggest Mr C to play his favourite music, and play it (M10,M11,P3,V3) E</p>	<p>A4'+A5'. Knowing the recipe and needed ingredients (A3) the robot walk with Mr C and ask (Y/N) if ingredient X is available, making a list of the ones missing. A6'+A7'. Tell MrC the positions of needed objects in the environment, knowing them a priori, or detecting them by using markers. A9'. Turn with the screen close to MrC and place a Skypeout/whatsapp call to the shop. A10'. Ask M C the expected time of delivery of the ingredients (speech/tablet) and remind her about them. A13'. Suggest MrC how to lay the table (by observing the action, and suggesting position, eg. “to the right”) A13''. Make general comments about table preparation. A14'. Suggest Mr C to bring the tray with food to the table A15'. Ask Mr C if he wants to hear radio and the type of music. Then, reproduce the selected radio channel</p>
<p>Left: Robot motor capabilities required Right: Corresponding Pepper API (if any)</p>	<p>M1. Coordinately move base/ arms/ hands (A13,A14) M2. Grasp objects (A7,A13,A14) M3. Carry lightweight items (A7,A13) M4. Carry heavyweight items (A14)</p>	<p>- ALMotion - no dedicated module, it could be achieved with external libraries - feasible if payload is <300 g - not feasible</p>

	<p>M5. Navigate autonomously in the house (A6,A7,A13,A14)</p> <p>M6. Follow moving objects / persons (A4)</p> <p>M7. Reach a target / person (A7,A13,A14)</p> <p>M8. Avoid unexpected static or moving obstacles / persons (A4,A6,A7,A13,A14)</p> <p>M9. Show feelings (A12)</p> <p>M10. Turn on radio / TV / cassette player (A15)</p> <p>M11. Operate appliance (by communicating with smart environment) (A15)</p>	<ul style="list-style-type: none"> - ALNavigation - ALVisionRecognition, ALCloseObjectDetection, ALNavigation - ALVisionRecognition, ALCloseObjectDetection, ALNavigation - ALMotion - ALLeds, ALRobotPosture, ALAnimationPlayer - ALAudioPlayer For external devices, it could be achieved with a specific communication protocol - It could be achieved with a specific communication protocol
<p>Left: Robot perceptual capabilities required</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>P1. Locate persons (distance and position) (A4,A7)</p> <p>P2. Recognize emotions (A11)</p> <p>P3. Recognize actions (A4,A15)</p> <p>P4. Recognize obstacles / uneven ground (A4,A6,A7,A13,A14)</p> <p>P5. Recognize/ Locate items (A6,A13,A14)</p> <p>P6. Retrieve / store information (A1,A2,A3,A5,A9,A10)</p> <p>P7. Recognize persons / faces (A1)</p>	<ul style="list-style-type: none"> - ALPeoplePerception - ALMood - no dedicated module, it could be achieved with external libraries - ALLaser, ALSonar - ALVisionRecognition - ALMemory - ALFaceDetection
<p>Left: Robot verbal capabilities involved</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>V1. Ask Yes/ No questions (A8,A11)</p> <p>V2. Ask multiple choice questions (A12)</p> <p>V3. Suggest / remind (A1,A2,A10,A11,A15)</p> <p>V4. List instructions (A3)</p>	<ul style="list-style-type: none"> - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech, ALTabletService

	<p>V5. Context dependent chat (A2,A4,A12)</p> <p>V6. Greet (A9)</p> <p>V7. Encourage/ praise (A9)</p> <p>V8. Report information (A10)</p> <p>V9. Place a phone call (A9)</p>	<p>- ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService</p> <p>- ALDialog, ALTextToSpeech</p> <p>- ALDialog, ALTextToSpeech, ALTabletService</p> <p>- ALMemory, ALTextToSpeech, ALTabletService</p> <p>- no dedicated module, it could be achieved with external libraries</p>
<p>Which “qualitative” robot behavior is expected to be culturally dependent</p>	<p>R1. Helps with planning of dinner</p> <p>R2. Contacts Indian stores for different products</p> <p>R3. Helping with laying the table as per H11</p> <p>R4. Welcoming the family</p> <p>R5. Help with serving the food on a tray</p> <p>R6. Offer and encourage people to have food and then some more</p> <p>R7. Asks indirect questions</p>	
<p>Which behavior is “quantitatively” different depending con culture (volume and tone of voice, distance, velocity, etc)</p>	<p>T1. Speaks with soft tone</p> <p>T2. Speaks in low volume</p> <p>T3. Be silent when needed</p> <p>T4. Walks in low speed</p> <p>T5. Not too many gestures</p> <p>T6. Stands not too close to Mr C</p>	

3. MRS SMITH - SCRIPT

Mrs Smith is a 75 year old English lady, a former school teacher who recently moved in sheltered accommodation in Cambridge UK along with her beloved cat named 'tiger'¹. Her husband died 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 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 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 him².

She has a boiled egg with toast around 9am for breakfast³ 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 on⁴. 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

1. *Common for older adults to have pets*
2. *Family expectations*
3. *Common foods for breakfast tea, toast, cereal/porridge, boiled eggs, fried/grilled bacon, sausage, baked beans, tomatoes*



4. *Dressing. Common for women of her generation to dress smartly and wear makeup irrespective of whether they will go out or not*

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.

She expects her son to arrive at 1pm and they will go to the local pub for Sunday roast lunch⁵. He arrives on time⁶. 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 has to rush back so they hug and kiss (air kiss on one chick) and they say goodbye⁹.

She comes in, takes off her shoes, puts on her slippers, sits on her armchair and covers herself with her blanket. She turns on the radio and soon she closes her eyes and takes a nap. Tiger 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 and relax.

It is afternoon now and she is expecting her friend, Mrs Brown. They had arranged this visit the last time they talked over the phone, a month ago¹⁰. It will be lovely to see her. They will have cream tea together¹¹. 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 cosy¹². 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.

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

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.*



6. *Cultural orientation to time*

7. *Common to share a board game such as scrabble*



8. *Not uncommon that the son visited without his wife*

9. *Greeting*

10. *Formal arranging of social visits*

11. *Cream tea: Afternoon tea with warm scones, cream and jam. Describe differences with 'high tea' and 'tea' which refers to light dinner.*

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.*




classical music.

It is time for dinner now and Mrs Smith decides to have something light. She will have a ham salad¹³ 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.

13. Light dinner, often a cold salad or sandwiches

3.1 MRS SMITH – MORNING ROUTINE, BREAKFAST

Scenario name	Mrs Smith - Breakfast	
Time of the day	Morning	
General Description	<p><...> Mrs S has a boiled egg with toast around 9am for breakfast¹ 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 report³.</p> <p>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.</p> <p>Another routine would be to feed Tiger² her cat and since he is a very important cat he gets his food first!</p>	<p>1. Common foods for breakfast (tea, toast, cereal/porridge, boiled eggs, fried/grilled bacon, sausage, baked beans, tomatoes.)</p>  <p>2. Many English people, especially older people living alone are very attached to their animals (cats or dogs).</p> <p>3. 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.</p>
Functional areas of the house involved	F1. Kitchen	
Relevant objects involved	<p>O1. Plates/glasses</p> <p>O2. Pot for tea</p> <p>O3. Toaster</p> <p>O4. Cutlery</p> <p>O5. Table</p> <p>O6. Chair</p> <p>O7. Radio</p> <p>O8. Cat's water and food dish</p>	

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 H8. Ask whether she would like to have tea or coffee or juice H9. Make tea of coffee H10. Switch on the radio H11. Ask Mrs S what radio channel she would like to listen H12. Reminder her about her medication H13. Fill cat’s dish with cat food H14. Wash cat’s water dish and fill up with clean water	
Cultural knowledge involved (top level concepts in the Cultural Knowledge hierarchy)	C1. English breakfast dishes and preferences C2. Names of different English breakfast dishes C3. Knowledge of English cooking C4. Names of different English radio channels and programmes	
Which “qualitative” caregiver behaviour is expected to be culturally dependent	D1. English breakfast and what it could entail D2. Awareness of Mrs S preferences (having toast, or eggs or bacon , tea /coffee etc) D3. Awareness of where Mrs S likes to take her breakfast D4. Preferences of news/radio channels D5. Understand the importance of the cat to Mrs S. D6. Polite and respectful way of addressing Mrs S. ‘Please’ and ‘Thank you’ prefix most dialogue.	
Which behavior is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc.)	E1. Normal volume of voice E2. Moving about at normal speed, looking efficient E3. Not many gestures	
Left: What the robot shall / can do in this scenario Right: Alternative tasks	A1. Greet Mrs S, saying “Good Morning” and asking her how she is feeling today (M5,M9,P1,P2,P4,V2,V4,V5) [E] A2. Provide a list of choices that Mrs S can have for breakfast	A5'+A6'. Tell Mrs S the positions of needed objects in the environment, knowing them a priori, or detecting

	<p>and ask her what she wants for breakfast (P7,V2,V3) [E]</p> <p>A3. Praise on eating a healthy and balanced diet (V4,V6) [E]</p> <p>A4. Ask Mrs S if she needs help for preparing breakfast (P3,V1) [E]</p> <p>A5. Locate objects as needed (plates, glasses, pots, cat food) (M4,M6,P5,P6) [H]</p> <p>A6. Bring objects as needed (plates, glasses, pots, cat food) (M1,M2,M4,M5,M6,P1,P5) [H]</p> <p>A7. Prepare a tray with food (M1,M2,P6) [H]</p> <p>A8. Bring the tray with food to Mrs S to the table (M1,M2,M3,M4,M5,M6,P1,P5,P6) [H]</p> <p>A9. Remind her to take her medication if needed (P7,P8,V3) [E]</p> <p>A10. Respond to her request to hear the news on the radio (M7,M8) [H]</p> <p>A11. Keep company to Mrs S while eating (M5,P2,P3,V4) [E]</p> <p>A12. Ask Mrs S if she enjoyed her breakfast and comment on her dietary choices (M9,P2,P3,V1,V2,V4) [H]</p> <p>A13. Remind her to feed her cat and ask her if she needs help in bringing cat food (P7,V1,V3,V4,V6) [E]</p> <p>A14. Inform Mrs S if she has any text /telephone messages and read them to her (M8,P7,V7) [H]</p> <p>A15. Provide information about the weather (P7,P9,V4,V7) [E]</p> <p>A16. Provide information on supplies (e.g. cat food) and whether they need to order/buy (M8,P7,V4,V7) [H]</p>	<p>them by using markers.</p> <p>A7'+A8'. Locate and indicate objects needed for preparing the tray, knowing their position in the environment, or using markers</p> <p>Suggest Mrs S to bring the tray with food to the table</p> <p>A6''+A8''. Permanently attach a tray to the robot's chest to bring objects</p> <p>A10'. Ask Mrs S if she wants to hear the news. If yes, connect to her favorite (known a priori) internet radio channel.</p> <p>A10''. Ask Mrs S if she wants to hear radio and the type of music. Then, reproduce the selected radio channel</p> <p>A12'. Provide general comments about breakfast and diet</p> <p>A14'. Check email or events from apps such as Whatsapp / Viber</p> <p>A16'. Suggest Mrs S to check supplies and if missing to generate a reminder for buying/ordering them.</p>
<p>Left: Robot motor capabilities required</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>M1. Grasp objects (A6,A7,A8)</p> <p>M2. Carry lightweight items (A6,A7,A8)</p> <p>M3. Carry heavyweight items (A8)</p> <p>M4. Navigate autonomously in the house (A5,A6,A8)</p> <p>M5. Reach a target / person (A1,A6,A8,A11)</p> <p>M6. Avoid unexpected static or moving obstacles / persons (A5,A6,A8)</p> <p>M7. Turn on radio / TV /cassette player (A10)</p>	<ul style="list-style-type: none"> - no dedicated module, it could be achieved with external libraries - feasible if payload is <300 g - not feasible - ALNavigation - ALVisionRecognition, ALCloseObjectDetection, ALNavigation - ALMotion - ALAudioPlayer <p>For external devices, It could be</p>

	<p>M8. Operate appliance (by communicating with smart environment) (A10,A14,A16)</p> <p>M9. Show feelings (A1,A12)</p>	<p>achieved with a specific communication protocol</p> <p>- It could be achieved with a specific communication protocol</p> <p>- ALLeds, ALRobotPosture, ALAnimationPlayer</p>
<p>Left: Robot perceptual capabilities required</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>P1. Locate persons (distance and position) (A1,A6,A8)</p> <p>P2. Recognize emotions (A1,A11,A12)</p> <p>P3. Recognize actions (A4,A11,A12)</p> <p>P4. Recognize persons / faces (A1)</p> <p>P5. Recognize obstacles / uneven ground (A5,A6,A8)</p> <p>P6. Recognize/ Locate items (A5,A7,A8)</p> <p>P7. Retrieve / store information (A2,A9,A13,A14,A15,A16)</p> <p>P8. Keep track of time (A9)</p> <p>P9. Recognize weather/ temperature (A15)</p>	<p>- ALPeoplePerception</p> <p>- ALMood</p> <p>- no dedicated module, it could be achieved with external libraries</p> <p>- ALFaceDetection</p> <p>- ALLaser, ALSonar</p> <p>- ALVisionRecognition</p> <p>- ALMemory</p> <p>- no dedicated module, it could be achieved with different solutions</p> <p>- no dedicated module, it could be checked the broadcast on internet or by communicating with the smart environment</p>
<p>Left: Robot verbal capabilities involved</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>V1. Ask Yes/ No questions (A4,A12,A13)</p> <p>V2. Ask multiple choice questions (A1,A2)</p> <p>V3. Suggest / remind (A2,A9,A13,A16)</p> <p>V4. Context dependent chat (A1,A3,A11,A12,A13,A15,A16)</p> <p>V5. Greet (A1)</p> <p>V6. Encourage/ praise (A3,A13)</p> <p>V7. Report information (A14,A15,A16)</p>	<p>- ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService</p> <p>- ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService</p> <p>- ALDialog, ALTextToSpeech, ALTabletService</p> <p>- ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService</p> <p>- ALDialog, ALTextToSpeech</p> <p>- ALDialog, ALTextToSpeech, ALTabletService</p> <p>- ALMemory, ALTextToSpeech, ALTabletService</p>
<p>Which “qualitative” robot behavior is expected to be</p>	<p>R1. Polite way of asking and interacting</p> <p>R2. Waits for her instructions</p>	

culturally dependent	R3. Awareness of Mrs S preferences (having toast, or eggs or bacon , tea /coffee etc) R4. Awareness of where Mrs S likes to take her breakfast R5. Preferences of news/radio channels
Which behavior is “quantitatively” different depending con culture (volume and tone of voice, distance, velocity, etc)	T1. Speaks with normal tone T2. Speaks in normal volume T3. Walks in normal speed T4. Not too many gestures T5. Stands not too close to Mrs S

3.2 MRS SMITH - MORNING ROUTINE, DRESSING

Scenario name	Mrs Smith - Morning routine, Dressing	
Time of the day	Morning	
General Description	<p><.....> After breakfast, she gets dressed (she puts on a skirt and a nice blouse¹), 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.</p>	<p>1. <i>Items of western clothing</i></p>
Functional areas of the house involved	<p>F1. Bedroom - Bed F2. Bedroom – Wardrobe F3. Bedroom – Drawers F4. Bedroom - dressing table</p>	
Relevant objects involved	<p>O1. Blouse, skirts O2. Perfume O3. Comb O4. Make up</p>	
Relevant persons (in addition to user and caregiver)	<p>B1. No-one</p>	
What a human (formal or informal) caregiver shall / can do in this scenario	<p>H1. Asks Mrs S if she would like help with choosing her clothes H2. Recommend clothes and propose combinations H3. Help her find her clothes H4. Help Mrs 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 jewels if she would like H7. Suggest a perfume H6. Bring comb H7. Recommend shoes and handbag</p>	
Cultural knowledge involved (top level concepts in the Cultural Knowledge hierarchy)	<p>C1. Western items of clothing C2. Culture of getting ready (manicures, pedicures, hair etc)</p>	

Which “qualitative” caregiver behavior is expected to be culturally dependent	<p>D1. Ask permission to enter bedroom and offer help. Maintain a distance from Mrs S</p> <p>D2. Praise in a discrete way (Is it appropriate to praise?)</p> <p>D3. Time taken to get dressed (not too long)</p> <p>D4. Looking good, having hair and nails done is considered important</p> <p>D5. Remember her favourite clothes and perfumes</p>		
Which behavior is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc.)	<p>E1. Polite and normal tone of voice</p> <p>E2. Moving about at normal speed, looking efficient</p>		
<p>Left: What the robot shall / can do in this scenario</p> <p>Right: Alternative tasks</p>	<table border="1"> <tr> <td> <p>A1. Locate objects if needed (skirt, blouse, perfume, comb) (M5,M8,P5,P6) [H]</p> <p>A2. Bring objects if needed (skirt, blouse, perfume, comb) (M2,M3,M4,M5,M6,M8,P1,P5) [H]</p> <p>A3. Recommend clothes and propose some combinations (P4,P7,V1,V2,V3) [E]</p> <p>A4. Open wardrobe with clothes (M1,M2,M6,M7,M8,M9,P5,P6) [H]</p> <p>A5. Ask Mrs S if she needs help while getting dressed (P2,P4,V1,V4) [E]</p> <p>A6. Help Mrs S to get dressed by holding the clothes (M1,M2,M3,M6,M8,P1,P2,P5,P6) [H]</p> <p>A7. Switch on/off the lights when asked (M10) [H]</p> <p>A8. Provide privacy to Mrs S (M5,P4) [E]</p> <p>A9. Show interest and ask information about English way of dressing (M11,P7,V1,V2,V4) [E]</p> <p>A10. Make recommendations (on wearing jewels, perfume, shoes, handbag) (P7,P8,V3,V4,V5) [E]</p> <p>A11. Praise Mrs S for her look and beautiful blouse (M11,P3,V4,V5) [E]</p> <p>A12. Remind Mrs S her monthly appointment with the hairdresser (P7,V3,V4) [E]</p> </td> <td> <p>A1'+A2'. Tell Mrs S the positions of needed objects in the environment, knowing them a priori, or detecting them by using markers.</p> <p>A2''. Permanently attach a tray to the robot's chest to bring objects</p> <p>A4'. Open the wardrobe, by controlling its sliding doors by communicating with the smart home</p> <p>A6'. Bring a hanger (on wheels) close to Mrs S, and then bring it back to its place again.</p> <p>A7'. Connect to automatic controls of lights.</p> </td> </tr> </table>	<p>A1. Locate objects if needed (skirt, blouse, perfume, comb) (M5,M8,P5,P6) [H]</p> <p>A2. Bring objects if needed (skirt, blouse, perfume, comb) (M2,M3,M4,M5,M6,M8,P1,P5) [H]</p> <p>A3. Recommend clothes and propose some combinations (P4,P7,V1,V2,V3) [E]</p> <p>A4. Open wardrobe with clothes (M1,M2,M6,M7,M8,M9,P5,P6) [H]</p> <p>A5. Ask Mrs S if she needs help while getting dressed (P2,P4,V1,V4) [E]</p> <p>A6. Help Mrs S to get dressed by holding the clothes (M1,M2,M3,M6,M8,P1,P2,P5,P6) [H]</p> <p>A7. Switch on/off the lights when asked (M10) [H]</p> <p>A8. Provide privacy to Mrs S (M5,P4) [E]</p> <p>A9. Show interest and ask information about English way of dressing (M11,P7,V1,V2,V4) [E]</p> <p>A10. Make recommendations (on wearing jewels, perfume, shoes, handbag) (P7,P8,V3,V4,V5) [E]</p> <p>A11. Praise Mrs S for her look and beautiful blouse (M11,P3,V4,V5) [E]</p> <p>A12. Remind Mrs S her monthly appointment with the hairdresser (P7,V3,V4) [E]</p>	<p>A1'+A2'. Tell Mrs S the positions of needed objects in the environment, knowing them a priori, or detecting them by using markers.</p> <p>A2''. Permanently attach a tray to the robot's chest to bring objects</p> <p>A4'. Open the wardrobe, by controlling its sliding doors by communicating with the smart home</p> <p>A6'. Bring a hanger (on wheels) close to Mrs S, and then bring it back to its place again.</p> <p>A7'. Connect to automatic controls of lights.</p>
<p>A1. Locate objects if needed (skirt, blouse, perfume, comb) (M5,M8,P5,P6) [H]</p> <p>A2. Bring objects if needed (skirt, blouse, perfume, comb) (M2,M3,M4,M5,M6,M8,P1,P5) [H]</p> <p>A3. Recommend clothes and propose some combinations (P4,P7,V1,V2,V3) [E]</p> <p>A4. Open wardrobe with clothes (M1,M2,M6,M7,M8,M9,P5,P6) [H]</p> <p>A5. Ask Mrs S if she needs help while getting dressed (P2,P4,V1,V4) [E]</p> <p>A6. Help Mrs S to get dressed by holding the clothes (M1,M2,M3,M6,M8,P1,P2,P5,P6) [H]</p> <p>A7. Switch on/off the lights when asked (M10) [H]</p> <p>A8. Provide privacy to Mrs S (M5,P4) [E]</p> <p>A9. Show interest and ask information about English way of dressing (M11,P7,V1,V2,V4) [E]</p> <p>A10. Make recommendations (on wearing jewels, perfume, shoes, handbag) (P7,P8,V3,V4,V5) [E]</p> <p>A11. Praise Mrs S for her look and beautiful blouse (M11,P3,V4,V5) [E]</p> <p>A12. Remind Mrs S her monthly appointment with the hairdresser (P7,V3,V4) [E]</p>	<p>A1'+A2'. Tell Mrs S the positions of needed objects in the environment, knowing them a priori, or detecting them by using markers.</p> <p>A2''. Permanently attach a tray to the robot's chest to bring objects</p> <p>A4'. Open the wardrobe, by controlling its sliding doors by communicating with the smart home</p> <p>A6'. Bring a hanger (on wheels) close to Mrs S, and then bring it back to its place again.</p> <p>A7'. Connect to automatic controls of lights.</p>		
<p>Left: Robot motor capabilities required</p> <p>Right: Corresponding</p>	<table border="1"> <tr> <td> <p>M1. Coordinately move base/ arms/ hands (A4,A6)</p> <p>M2. Grasp objects (A2,A4,A6)</p> </td> <td> <p>- ALMotion</p> <p>- no dedicated module, it could be achieved with external libraries</p> </td> </tr> </table>	<p>M1. Coordinately move base/ arms/ hands (A4,A6)</p> <p>M2. Grasp objects (A2,A4,A6)</p>	<p>- ALMotion</p> <p>- no dedicated module, it could be achieved with external libraries</p>
<p>M1. Coordinately move base/ arms/ hands (A4,A6)</p> <p>M2. Grasp objects (A2,A4,A6)</p>	<p>- ALMotion</p> <p>- no dedicated module, it could be achieved with external libraries</p>		

Pepper API (if any)	<p>M3. Carry lightweight items (A2,A6)</p> <p>M4. Carry heavyweight items (A2)</p> <p>M5. Navigate autonomously in the house (A1,A2,A8)</p> <p>M6. Reach a target / person (A2,A4,A6)</p> <p>M7. Pull objects (A4)</p> <p>M8. Avoid unexpected static or moving obstacles / persons (A1,A2,A4,A6)</p> <p>M9. Open doors / windows (by communicating with smart environment) (A4)</p> <p>M10. Operate appliance (by communicating with smart environment) (A7)</p> <p>M11. Show feelings (A9,A11)</p>	<ul style="list-style-type: none"> - feasible if payload is <300 g - not feasible - ALNavigation - ALVisionRecognition, ALCloseObjectDetection, ALNavigation - no dedicated module, it could be achieved with external libraries - ALMotion - It could be achieved with a specific communication protocol - It could be achieved with a specific communication protocol - ALLeds, ALRobotPosture, ALAnimationPlayer
<p>Left: Robot perceptual capabilities required</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>P1. Locate persons (distance and position) (A2,A6)</p> <p>P2. Recognize posture, gesture, movements (A5,A6)</p> <p>P3. Recognize emotions (A11)</p> <p>P4. Recognize actions (A3,A5,A8)</p> <p>P5. Recognize obstacles / uneven ground (A1,A2,A4,A6)</p> <p>P6. Recognize/ Locate items (A1,A4,A6)</p> <p>P7. Retrieve / store information (A3,A9,A10,A12)</p> <p>P8. Recognize weather/ temperature (A10)</p>	<ul style="list-style-type: none"> - ALPeoplePerception - no dedicated module, it could be achieved with external libraries - ALMood - no dedicated module, it could be achieved with external libraries - ALLaser, ALSonar - ALVisionRecognition - ALMemory - no dedicated module, it could be checked the broadcast on internet or by communicating with the smart environment
<p>Left: Robot verbal capabilities involved</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>V1. Ask Yes/ No questions (A3,A5,A9)</p> <p>V2. Ask multiple choice questions (A3,A9)</p> <p>V3. Suggest / remind (A3,A10,A12)</p> <p>V4. Context dependent chat (A5,A9,A10,A11,A12)</p>	<ul style="list-style-type: none"> - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService

	V5. Encourage/ praise (A10,A11)	- ALDialog, ALTextToSpeech, ALTabletService
Which “qualitative” robot behavior is expected to be culturally dependent	R1. Way of dressing R2. Type of clothes depending on the occasion R3. May have to leave the room when Mrs S is changing R4. Provide privacy	
Which behavior is “quantitatively” different depending con culture (volume and tone of voice, distance, velocity, etc)	T1. Speaks with normal tone T2. Speaks with normal volume T3. Walks in normal speed	



3.3 MRS SMITH – PRE LUNCH ROUTINE, PRAY

Scenario name	Mrs Smith – Pre lunch routine, Pray	
Time of the day	Morning	
General Description	<p><...> 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.</p> <p>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.</p>	
Functional areas of the house involved	F1. Living room	
Relevant objects involved	O1. Audio books O2. TV /radio	
Relevant persons (in addition to user and caregiver)	B1. nobody	
What a human (formal or informal) caregiver shall / can do in this scenario	H1. Source the audio books H2. Engage in discussions about her readings	
Cultural knowledge involved (top level concepts in the Cultural Knowledge hierarchy)	C1. Religion and culture C2. The intersection of ethics, religion, science and politics	
Which “qualitative” caregiver behaviour is expected to be culturally dependent	D1. Showing respect for Mrs S values and religious beliefs D2. Awareness of her interest in religious and ethical discussions on radio and TV	

Which behaviour is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc.)	<p>E1. Speak in normal tone of voice</p> <p>E2. Keeping quiet whist she is listening/watching a programme</p>	
<p>Left: What the robot shall / can do in this scenario</p> <p>Right: Alternative tasks</p>	<p>A1. Reach Mrs S and ask her if she would like to choose an online book or TV programme from his tablet list (M1,M2,M3,P1,P2,P3,P4,V1) [E]</p> <p>A2. In case, show to Mrs S the list of available programmes (P5,V3,V5) [E]</p> <p>A3. Switch on/off TV/radio accordingly (M4,M5) [H]</p> <p>A4. Provide privacy, staying silent in the room during the radio/TV show (M1,P2) [E]</p> <p>A5. Read an audiobook upon her request (M6,V6) [E]</p> <p>A6. Comment on the chosen TV/Radio show or audiobook (M6,P5,P6,V2,V4) [E]</p>	<p>A3'. Connect to internet radio TV and let Mrs C watch her favorite TV program via the Pepper’s screen.</p>
<p>Left: Robot motor capabilities required</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>M1. Navigate autonomously in the house (A1,A4)</p> <p>M2. Reach a target / person (A1)</p> <p>M3. Avoid unexpected static or moving obstacles / persons (A1)</p> <p>M4. Turn on radio / TV /cassette player (A3)</p> <p>M5. Operate appliance (by communicating with smart environment) (A3)</p> <p>M6. Show feelings (A5,A6)</p>	<ul style="list-style-type: none"> - ALNavigation - ALVisionRecognition, ALCloseObjectDetection, ALNavigation - ALMotion - ALAudioPlayer For external devices, It could be achieved with a specific communication protocol - It could be achieved with a specific communication protocol - ALLeds, ALRobotPosture, ALAnimationPlayer
<p>Left: Robot perceptual capabilities required</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>P1. Locate persons (distance and position) (A1)</p> <p>P2. Recognize actions (A1,A4)</p> <p>P3. Recognize persons / faces (A1)</p> <p>P4. Recognize obstacles / uneven ground (A1)</p> <p>P5. Retrieve / store information (A2,A6)</p>	<ul style="list-style-type: none"> - ALPeoplePerception - no dedicated module, it could be achieved with external libraries - ALFaceDetection - ALLaser, ALSonar - ALMemory

	P6. Recognize dialogue context (A6)	- ALSpeechRecognition
Left: Robot verbal capabilities involved Right: Corresponding Pepper API (if any)	V1. Ask Yes/ No questions (A1)	- ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService
	V2. Ask multiple choice questions (A6)	- ALDialog, ALSpeechRecognition, 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 behavior is expected to be culturally dependent	R1. Showing respect to Mrs S values and beliefs	
Which behavior is “quantitatively” different depending con culture (volume and tone of voice, distance, velocity, etc)	T1. Speaks with soft tone	
	T2. Speaks in low volume	
	T3. Walks in low speed	

3.4 MRS SMITH – LUNCH ROUTINE, SON, SOCIAL ACTIVITY

Scenario name	Mrs Smith – Lunch routine, Son, social activity	
Time of the day	Lunch time	
General Description	<p><...> 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.</p> <p>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.</p>	<p>1. Family expectations</p> <p>2. 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.</p>  <p>3. Cultural orientation to time</p> <p>4. Common to share a board game such as scrabble</p>  <p>5. Not uncommon that the son visited without his wife</p> <p>6. Mother-son greeting</p>
Functional areas of the house involved	<p>F1. Entrance</p> <p>F2. Living room</p>	
Relevant objects involved	<p>O1. Shoes</p> <p>O2. Coat</p>	

	<ul style="list-style-type: none"> O3. Gloves O4. Coat stand O5. Umbrella O6. Umbrella holder O7. Handbag O8. Board game O9. Food
Relevant persons	B1. Son (informal carer)
What a human (formal or informal) caregiver shall / can do in this scenario	<ul style="list-style-type: none"> H1. Inform her that her son arrived H2. Open the door and greet son 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. Help her put on her coat H9. Provide some privacy to mother and son
Cultural knowledge involved (top level concepts in the Cultural Knowledge hierarchy)	<ul style="list-style-type: none"> C1. Greeting customs C2. Level of communication and detail of exchange of information C3. Son /parent relationship in English culture C4. Custom of playing a game together C5. Family expectations (e.g. son may visit alone without his wife, mother may not call very often so that she will not bother) C6. Length of visit (based on a time schedule; to some extent timed 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” caregiver behaviour is expected to be culturally dependent	<ul style="list-style-type: none"> D1. Way of greeting with family members D2. Distance from visitor and minimal involvement in the son-mother conversation D3. Constraint expression of emotion between mother-son D4. Touching not desirable for non-family members
Which behaviour is “quantitatively” different depending on culture (volume and tone of voice,	<ul style="list-style-type: none"> E1. Polite and brief conversation E2. Carer keeps some physical and conversational distance from mother-son E3. Moving about in a discrete manner E4. Not much gesturing

distance, velocity, etc.)		
<p>Left: What the robot shall / can do in this scenario Right: Alternative tasks</p>	<p>A1. Comments on Mrs S smart appearance (P3,P5,V4) [E] A2. Remind Mrs S that her soon will come to visit her at 13:00 (P8,V3,V6) [E] A3. Open the door and greet the visitor (shake hand) (M1,M4,M6,M7,M8,P1,P2,P5,P6,V5) [H] A4. Welcome the son indoor (M9,V1,V2,V4) [E] A5. Inform Mrs S that her son arrived (M6,M7,P1,P6,V6) [E] A6. Leave privacy to mother and son (M4,M7,P6) [E] A7. Locate things as needed (shoes, coat, gloves, umbrella, etc) (M4,M7,P6,P7) [H] A8. Bring things as needed (shoes, coat, gloves, umbrella, etc) (M2,M3,M4,M6,M7,P1,P6) [H] A9. Provide information about the weather (P10,V4,V6) [E] 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]</p>	<p>A3'. Open door by communicating with the smart environment. Ask the visitor to come closer for shaking hands A7'+A8'. Tell Mrs S the positions of needed objects in the environment, knowing them a priori, or detecting them by using markers. A8''. Permanently attach a tray to the robot's chest to bring objects A12'. Bring a hanger (on wheels) with coat close to Mrs S, and then bring it back to its place again.</p>
<p>Left: Robot motor capabilities required Right: Corresponding Pepper API (if any)</p>	<p>M1. Coordinately move base/ arms/ hands (A3,A12) M2. Grasp objects (A8,A12) M3. Carry lightweight items (A8,A12) M4. Navigate autonomously in the house (A3,A6,A7,A8) M5. Track moving objects / persons (A11)</p>	<ul style="list-style-type: none"> - ALMotion - no dedicated module, it could be achieved with external libraries - feasible if payload is <300 g - ALNavigation - ALLandmarkDetection, ALColorBlobDetection, ALVisionRecognition, ALCloseObjectDetection

	<p>M6. Reach a target / person (A3,A5,A8,A12)</p> <p>M7. Avoid unexpected static or moving obstacles / persons (A3,A5,A6,A7,A8)</p> <p>M8. Open doors / windows (by communicating with smart environment) (A3)</p> <p>M9. Show feelings (A4,A11,A14)</p>	<ul style="list-style-type: none"> - ALVisionRecognition, ALCloseObjectDetection, ALNavigation - ALMotion - It could be achieved with a specific communication protocol - ALLeds, ALRobotPosture, ALAnimationPlayer
<p>Left: Robot perceptual capabilities required Right: Corresponding Pepper API (if any)</p>	<p>P1. Locate persons (distance and position) (A3,A5,A8,A11,A12)</p> <p>P2. Recognize posture, gesture, movements (A3,A12)</p> <p>P3. Recognize emotions (A1,A14)</p> <p>P4. Recognize actions (A10)</p> <p>P5. Recognize persons / faces (A1,A3)</p> <p>P6. Recognize obstacles / uneven ground (A3,A5,A6,A7,A8)</p> <p>P7. Recognize/ Locate items (A7,A12)</p> <p>P8. Retrieve / store information (A2,A10,A13,A15)</p> <p>P9. Recognize dialogue context (A13)</p> <p>P10. Recognize weather/ temperature (A9)</p> <p>P11. Take pictures (A11)</p> <p>P12. Use search engines for finding information (A13)</p>	<ul style="list-style-type: none"> - ALPeoplePerception - no dedicated module, it could be achieved with external libraries - ALMood - no dedicated module, it could be achieved with external libraries - ALFaceDetection - ALLaser, ALSonar - ALVisionRecognition - ALMemory - ALDialog, ALAudioPlayer - no dedicated module, it could be checked the broadcast on internet or by communicating with the smart environment - ALPhotoCapture - ALTabletService
<p>Left: Robot verbal capabilities involved Right: Corresponding Pepper API (if any)</p>	<p>V1. Ask Yes/ No questions (A4,A14)</p> <p>V2. Ask multiple choice questions (A4,A14,A15)</p> <p>V3. Suggest / remind (A2,A10,A13)</p> <p>V4. Context dependent chat (A1,A4,A9,A13,A14,A15)</p> <p>V5. Greet (A3)</p> <p>V6. Report information (A2,A5,A9,A10,A13)</p>	<ul style="list-style-type: none"> - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech - ALMemory, ALTextToSpeech,

		ALTabletService
Which “qualitative” robot behavior is expected to be culturally dependent	R1. Way of greeting –extends right hand R2. Provides privacy R3. Behaves in a very polite manner	
Which behavior is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc)	T1. Speaks with normal tone T2. Speaks in normal volume T3. Walks in normal speed T4. Stands not too close to Mrs S T5. Keeps acceptable distance from the visitor T6. Not too many gestures T7. Is silent when needed	

3.5 MRS SMITH - AFTER LUNCH ROUTINE, NAP

Scenario name	Mrs Smith - After Lunch routine->nap	
Time of the day	Early afternoon	
General Description	<p><...> 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.</p>	<p>1. Her cat 2. Common to have a pet</p>
Functional areas of the house involved	F1. Living room or bedroom/living area	
Relevant objects involved	<p>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)</p>	
Relevant persons (in addition to user and caregiver)	B1. No-one	
What a human (formal or informal) caregiver shall / can do in this scenario	<p>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.</p>	
Cultural knowledge involved (top level concepts in the Cultural Knowledge hierarchy)	C1. Pet ownership and relationship	

Which “qualitative” caregiver behaviour is expected to be culturally dependent	<p>D1. Individuality and independence</p> <p>D2. Attitude towards her pet</p> <p>D3. Politeness as a key value</p>	
Which behaviour is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc.)	<p>E1. Normal volume of voice</p> <p>E2. Respectful tone of voice</p> <p>E3. Respecting her personal space</p> <p>E4. Moving about at normal speed</p> <p>E5. Not too many gestures</p>	
<p>Left: What the robot shall / can do in this scenario</p> <p>Right: Alternative tasks</p>	<p>A1. Suggest to Mrs S a short nap (M4,M8,P1,P3,P5,V3) [E]</p> <p>A2. Ask if Mrs S is warm enough (P2,P3,P4,P10,V1,V2,V4) [E]</p> <p>A3. Locate objects as needed (blanket, slippers) (M3,M5,P6,P7) [H]</p> <p>A4. Bring objects as needed (blanket, slippers) (M1,M2,M3,M4,M5,P1,P6) [H]</p> <p>A5. Ask Mrs S if she would like some background music (P4,V1,V3) [E]</p> <p>A6. Switch radio on/off, putting the appropriate channel (M6,M7,P8) [H]</p> <p>A7. Ask Mrs S if she prefer to be woken up after some time and provide privacy (M3,V1) [E]</p> <p>A8. Keep track of time and eventually gently wake up Mrs S if she sleeps for more than the required time (P9,V3,V5) [E]</p> <p>A9. Locate Tiger the cat, and encourage him to sit on her lap (M3,M5,P6,P7,V5) [H]</p> <p>A10. Remind Mrs S to move, to feed the cat and ask if she needs any help (M8,P4,P8,V3,V4,V5) [E]</p>	<p>A3'+A4'. Tell Mrs S the positions of needed objects in the environment, knowing them a priori, or detecting them by using markers.</p> <p>A4''. Permanently attach a tray to the robot's chest to bring objects</p> <p>A6'. Connect to her favorite (known a priori) internet radio channel.</p> <p>A5'+A6''. Ask Mrs S if she wants to hear radio and the type of music. Then, reproduce the selected radio channel</p> <p>A9'. Call Tiger the cat, and encourage him to sit on her lap</p>
<p>Left: Robot motor capabilities required</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>M1. Grasp objects (A4)</p> <p>M2. Carry lightweight items (A4)</p> <p>M3. Navigate autonomously in the house (A3,A4,A7,A9)</p> <p>M4. Reach a target / person (A1,A4)</p> <p>M5. Avoid unexpected static or moving obstacles / persons (A3,A4,A9)</p>	<p>- no dedicated module, it could be achieved with external libraries</p> <p>- feasible if payload is <300 g</p> <p>- ALNavigation</p> <p>- ALVisionRecognition, ALCloseObjectDetection, ALNavigation</p> <p>- ALMotion</p>

	<p>M6. Turn on radio / TV /cassette player (A6)</p> <p>M7. Operate appliance (by communicating with smart environment) (A6)</p> <p>M8. Show feelings (A1,A10)</p>	<p>- ALAudioPlayer For external devices, It could be achieved with a specific communication protocol</p> <p>- It could be achieved with a specific communication protocol</p> <p>- ALLeds, ALRobotPosture, ALAnimationPlayer</p>
<p>Left: Robot perceptual capabilities required Right: Corresponding Pepper API (if any)</p>	<p>P1. Locate persons (distance and position) (A1,A4)</p> <p>P2. Recognize posture, gesture, movements (A2)</p> <p>P3. Recognize emotions (A1,A2)</p> <p>P4. Recognize actions (A2,A5,A10)</p> <p>P5. Recognize persons / faces (A1)</p> <p>P6. Recognize obstacles / uneven ground (A3,A4,A9)</p> <p>P7. Recognize/ Locate items (A3,A9)</p> <p>P8. Retrieve / store information (A6,A10)</p> <p>P9. Keep track of time (A8)</p> <p>P10. Recognize weather/ temperature (A2)</p>	<p>- ALPeoplePerception - no dedicated module, it could be achieved with external libraries</p> <p>- ALMood - no dedicated module, it could be achieved with external libraries</p> <p>- ALFaceDetection</p> <p>- ALLaser, ALSonar</p> <p>- ALVisionRecognition</p> <p>- ALMemory - no dedicated module, it could be achieved with different solutions</p> <p>- no dedicated module, it could be checked the broadcast on internet or by communicating with the smart environment</p>
<p>Left: Robot verbal capabilities involved Right: Corresponding Pepper API (if any)</p>	<p>V1. Ask Yes/ No questions (A2,A5,A7)</p> <p>V2. Ask multiple choice questions (A2)</p> <p>V3. Suggest / remind (A1,A5,A8,A10)</p> <p>V4. Context dependent chat (A2,A10)</p> <p>V5. Encourage/ praise (A8,A9,A10)</p>	<p>- ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService</p> <p>- ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService</p> <p>- ALDialog, ALTextToSpeech, ALTabletService</p> <p>- ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService</p> <p>- ALDialog, ALTextToSpeech, ALTabletService</p>
<p>Which "qualitative" robot</p>	<p>R1. Cat/Mrs S relationship</p>	

behavior is expected to be culturally dependent	R2. Which radio programme she has on and what she listens to
Which behavior is "quantitatively" different depending on culture (volume and tone of voice, distance, velocity, etc)	T1. Speaks with normal tone T2. Speaks in normal volume T3. Walks in normal speed T4. Stands not too close to Mrs S

3.6 MRS SMITH - AFTER LUNCH ROUTINE, SOCIAL ACTIVITIES (DRINKING TEA, VISITORS, TALKING)

Scenario name	Mrs Smith - After lunch routine, Social activities (drinking tea, visitors, talking)	
Time of the day	Early afternoon	
General Description	<p><.....> 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.</p> <p>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.</p>	<ol style="list-style-type: none"> 1. Formal arranging of social visits 2. Cream tea: Afternoon tea with warm scones, butter and jam. Describe differences with 'high tea' and 'tea' referring to light dinner 3. Relationships and expectations (what will visitor will bring or not) 4. English tea rituals, emphasis on the china used, tea pots, preparation of tea, tea warmer 5. Level of communication, exchange of details and information.
Functional areas of the house involved	<p>F1. Living room</p> <p>F2. Kitchen – cabinets, refrigerator</p>	
Relevant objects involved	<p>O1. Door</p> <p>O2. China Cups, spoons</p> <p>O3. Tea pot</p> <p>O4. Tea warmer</p> <p>O5. Scones, cream, jam</p>	
Relevant persons (in addition to user and caregiver)	<p>B1. Friend</p>	
What a human (formal or	<p>H1. Open the door for visitor and greet appropriately</p>	

informal) caregiver shall / can do in this scenario	H2. Welcome the visitor 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. 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 involved (top level concepts in the Cultural Knowledge hierarchy)	C1. English way of making tea C2. Cream Tea, High Tea, Tea as light dinner; knowing distinctions C3. Scones, jam, cream, butter (appropriate foods for a cream tea) 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 biscuits 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” caregiver behavior is expected to be culturally dependent	D1. Proper way of greeting D2. Properly addressing the visitor D3. Properly addressing Mrs S 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 “quantitatively” different depending con culture (volume and tone of voice, distance, velocity, etc.)	E1. Polite and soft tone of voice E2. Keep some distance for non-family members E3. Move gently and with low velocity E4. Smile	
Left: What the robot shall / can do in this scenario Right: Alternative tasks	A1. Open the door and greet the visitor (slight bow) (M1,M6,M7,M8,M9,P1,P5,P6,V5) [H] A2. Welcome the visitor indoor, showing with the hand the	A1'. Open the door by communicating with the smart environment and greet the visitor (slight bow)

	<p>way to the living room (M2,M6,M8,M10,P6,P10,V1,V2,V4) [E]</p> <p>A3. Take visitor’s coat and suggest her to sit (M2,M3,M4,M7,M8,P1,P2,P6,P7,V3) [H]</p> <p>A4. Offer to take from Mrs B (friend/visitor) the package that she has brought (assuming box with scones) and take it. (M3,M4,M7,M8,P1,P2,P6,P7,V1) [H]</p> <p>A5. Inform Mrs S that her friend has arrived (M7,M8,P6,V4,V7) [E]</p> <p>A6. Ask Mrs S how it can help with the tea (P9,V1,V2) [E]</p> <p>A7. Locate things as needed (cups, scones, pots,spoons) (M6,M8,P6,P7) [H]</p> <p>A8. Bring things as needed (cups, scones, pots,spoons) (M3,M4,M6,M7,M8,P1,P6) [H]</p> <p>A9. Prepare a tray with tea and sweets (M3,M4,P7) [H]</p> <p>A10. Bring the tray in the living room (M3,M5,M6,M7,M8,P1,P6) [H]</p> <p>A11. 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]</p> <p>A12. Provide privacy to Mrs S and friend (M6,P4) [E]</p> <p>A13. Suggest Mrs S to arrange another visit with her friend (M10,P3,V3,V6) [E]</p> <p>A14. In case, retrieve her calendar, suggest a date and store the information (P8,V3,V4)[E]</p> <p>A15. Remind both of any occasions that they would like to celebrate or recommend things to do at the next visit (P8,V3,V4) [E]</p>	<p>A3’. Show the visitor where to hang coat and suggest to sit</p> <p>A4’. Suggest the visitor to put the box on the table</p> <p>A7’+A8’. Tell Mrs S the positions of needed objects in the environment, knowing them a priori, or detecting them by using markers.</p> <p>A9’+A10’. Locate and indicate objects needed for preparing the tray, knowing their position in the environment, or using markers. Suggest Mrs S to bring the tray with food to the table</p> <p>A8’’+A10’’. Permanently attach a tray to the robot’s chest to bring objects</p>
<p>Left: Robot motor capabilities required Right: Corresponding Pepper API (if any)</p>	<p>M1. Coordinately move torso/ arms/ hands (A1)</p> <p>M2. Coordinately move base/ arms/ hands (A2,A3)</p> <p>M3. Grasp objects (A3,A4,A8,A9,A10)</p> <p>M4. Carry lightweight items (A3,A4,A8,A9)</p> <p>M5. Carry heavyweight items (A10)</p> <p>M6. Navigate autonomously in the house</p>	<ul style="list-style-type: none"> - ALMotion - ALMotion - no dedicated module, it could be achieved with external libraries - feasible if payload is <300 g - not feasible - ALNavigation

	<p>(A1,A2,A7,A8,A10,A12)</p> <p>M7. Reach a target / person (A1,A3,A4,A5,A8,A10)</p> <p>M8. Avoid unexpected static or moving obstacles / persons (A1,A2,A3,A4,A5,A7,A8,A10)</p> <p>M9. Open doors / windows (by communicating with smart environment) (A1)</p> <p>M10. Show feelings (A2,A13)</p>	<ul style="list-style-type: none"> - ALVisionRecognition, ALCloseObjectDetection, ALNavigation - ALMotion - It could be achieved with a specific communication protocol - ALLeds, ALRobotPosture, ALAnimationPlayer
<p>Left: Robot perceptual capabilities required Right: Corresponding Pepper API (if any)</p>	<p>P1. Locate persons (distance and position) (A1,A3,A4,A8,A10)</p> <p>P2. Recognize posture, gesture, movements (A3,A4)</p> <p>P3. Recognize emotions (A13)</p> <p>P4. Recognize actions (A12)</p> <p>P5. Recognize persons / faces (A1)</p> <p>P6. Recognize obstacles / uneven ground (A1,A2,A3,A4,A5,A7,A8,A10)</p> <p>P7. Recognize/ Locate items (A3,A4,A7,A9)</p> <p>P8. Retrieve / store information (A14,A15)</p> <p>P9. Recognize dialogue context (A6,A11)</p> <p>P10. Have knowledge of the map of the environment (A2)</p>	<ul style="list-style-type: none"> - ALPeoplePerception - no dedicated module, it could be achieved with external libraries - ALMood - no dedicated module, it could be achieved with external libraries - ALFaceDetection - ALLaser, ALSonar - ALVisionRecognition - ALMemory - ALSpeechRecognition - no dedicated module, it could be achieved with different solutions
<p>Left: Robot verbal capabilities involved Right: Corresponding Pepper API (if any)</p>	<p>V1. Ask Yes/ No questions (A2,A4,A6)</p> <p>V2. Ask multiple choice questions (A2,A6)</p> <p>V3. Suggest / remind (A3,A13,A14,A15)</p> <p>V4. Context dependent chat (A2,A5,A11,A14,A15)</p> <p>V5. Greet (A1)</p> <p>V6. Encourage/ praise (A13)</p> <p>V7. Report information (A5)</p>	<ul style="list-style-type: none"> - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech - ALDialog, ALTextToSpeech, ALTabletService - ALMemory, ALTextToSpeech,

		ALTabletService
Which “qualitative” robot behavior is expected to be culturally dependent	<ul style="list-style-type: none"> R1. Proper Way of greeting R2. Properly addressing the visitor 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 “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc)	<ul style="list-style-type: none"> T1. Speaks in low volume T2. Speaks with soft voice T3. Move in low speed T4. Stands not too close to Mrs C T5. Keeps acceptable distance from the visitor T6. Smile frequently 	

3.7 MRS SMITH – PREPARING FOR DINNER, DINNER

Scenario name	Mrs Smith – Preparing for dinner, Dinner	
Time of the day	Dinner time	
General Description	<p><...> It is time for dinner now and Mrs S decides to have something light. She will have a nice fresh ham salad¹; some lettuce, cucumber, tomato and slices of ham. She will also add a slice of bread with butter.</p> <p>She will watch her favourite TV programme, ‘country file’, feed Tiger and take her evening pills.</p>	<p><i>1. This is a normal Sunday evening dinner for people of her generation.</i></p>
Functional areas of the house involved	<p>F1. Living room</p> <p>F2. Kitchen</p>	
Relevant objects involved	<p>O1. Plates/glasses</p> <p>O2. Medication</p> <p>O3. TV & TV remote</p>	
Relevant persons (in addition to user and caregiver)	<p>P1. No-one</p>	
What a human (formal or informal) caregiver shall / can do in this scenario	<p>H1. Get all the ingredients for making the salad</p> <p>H2. Prepare salad</p> <p>H3. Use the appropriate plates/glasses /utensils</p> <p>H4. Bring the medication</p> <p>H5. Feed the cat</p> <p>H6. Switch on the TV/ find TV programme</p>	
Cultural knowledge involved (top level concepts in the Cultural Knowledge hierarchy)	<p>C1. Knowledge of tradition for late cooked lunch on Sunday (the most important family eating event of the week), followed by simple, usually cold dish for dinner such as salad or sandwiches.</p> <p>C2. Names of different TV channels and programmes</p> <p>C3. Knowledge of English cooking</p>	
Which “qualitative” caregiver behavior is expected to be culturally dependent	<p>D1. Help to prepare the light dinner</p> <p>D2. Responds to Mrs S preferences (having bread and butter with her salad)</p> <p>D3. Help to carry the food in the living room where it is normal to have Sunday dinner while watching TV</p>	

Which behavior is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc.)	<p>D4. Feed her beloved cat</p> <p>E1. Polite and normal volume of voice</p> <p>E2. Moving about in normal speed and manner</p> <p>E3. Gestures , few and not too exaggerated</p>	
<p>Left: What the robot shall / can do in this scenario</p> <p>Right: Alternative tasks</p>	<p>A1. Ask Mrs S if she needs any help with preparing dinner (P2,P3,V2,V4) [E]</p> <p>A2. Praise Mrs S on eating a healthy diet (M10,V4,V5) [E]</p> <p>A3. Locate object as needed (plates,glasses,pills) (M4,M7,P4,P5) [H]</p> <p>A4. Bring objects as needed (plates,glasses,pills) (M1,M2,M4,M6,M7,P1,P4) [H]</p> <p>A5. Bring a tray with food in the living room, following Mrs S (M1,M3,M4,M7,P4,P5) [H]</p> <p>A6. Keep company to Mrs S while eating (M10,P2,V1,V2,V4) [E]</p> <p>A7. Switch on/off TV when required (M8,M9) [H]</p> <p>A8. Remind Mrs S to take her medication and to feed her cat (P2,P6,V3) [E]</p> <p>A9. Ask information about recipes and comment on her dietary choices (M10,P6,V1,V2,V4) [E]</p>	<p>A3'+A4'. Tell Mrs S the positions of needed objects in the environment, knowing them a priori, or detecting them by using markers.</p> <p>A5'. Locate and indicate objects needed for preparing the tray, knowing their position in the environment, or using markers. Suggest Mrs S to bring the tray with food to the table</p> <p>A5''. Permanently attach a tray to the robot's chest to bring objects</p> <p>A7'. Switch on/off TV by connecting to the smart environment.</p> <p>A7''. Connect to internet TV and let Mrs S watch her favorite TV program via the Pepper's screen.</p>
<p>Left: Robot motor capabilities required</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>M1. Grasp objects (A4,A5)</p> <p>M2. Carry lightweight items (A4)</p> <p>M3. Carry heavyweight items (A5)</p> <p>M4. Navigate autonomously in the house (A3,A4)</p> <p>M5. Follow moving objects / persons (A5)</p> <p>M6. Reach a target /person (A4)</p> <p>M7. Avoid unexpected static or moving obstacles / persons (A3,A4,A5)</p> <p>M8. Turn on radio / TV /cassette player (A7)</p>	<ul style="list-style-type: none"> - no dedicated module, it could be achieved with external libraries - feasible if payload is <300 g - not feasible - ALNavigation - ALVisionRecognition, ALCloseObjectDetection, ALNavigation - ALVisionRecognition, ALCloseObjectDetection, ALNavigation - ALMotion - ALAudioPlayer <p>For external devices, It could be</p>

	<p>M9. Operate appliance (by communicating with smart environment) (A7)</p> <p>M10. Show feelings (A2,A6,A9)</p>	<p>achieved with a specific communication protocol</p> <ul style="list-style-type: none"> - It could be achieved with a specific communication protocol - ALLeds, ALRobotPosture, ALAnimationPlayer
<p>Left: Robot perceptual capabilities required</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>P1. Locate persons (distance and position) (A4,A5)</p> <p>P2. Recognize actions (A1,A6,A8)</p> <p>P3. Recognize persons / faces (A1)</p> <p>P4. Recognize obstacles / uneven ground (A3,A4,A5)</p> <p>P5. Recognize/ Locate items (A3)</p> <p>P6. Retrieve / store information (A8,A9)</p>	<ul style="list-style-type: none"> - ALPeoplePerception - no dedicated module, it could be achieved with external libraries - ALFaceDetection - ALLaser, ALSonar - ALVisionRecognition - ALMemory
<p>Left: Robot verbal capabilities involved</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>V1. Ask Yes/ No questions (A6,A9)</p> <p>V2. Ask multiple choice questions (A1,A6,A9)</p> <p>V3. Suggest / remind (A8)</p> <p>V4. Context dependent chat (A1,A2,A6,A9)</p> <p>V5. Encourage/ praise (A2)</p>	<ul style="list-style-type: none"> - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech, ALTabletService
<p>Which “qualitative” robot behavior is expected to be culturally dependent</p>	<p>R1. Stay with her in the living room where she is having Sunday dinner</p> <p>R2. Do not disturb during dinner as she is watching the TV</p>	
<p>Which behavior is “quantitatively” different depending con culture (volume and tone of voice, distance, velocity, etc)</p>	<p>T1. Speaks with soft tone</p> <p>T2. Speaks in normal volume</p> <p>T3. Walks in low speed</p> <p>T4. Stands not too close to Mrs S</p> <p>T5. Not too many gestures</p>	

3.8 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	<p><...> Recently, 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.</p> <p>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.</p> <p>After her friend's departure Mrs S turns the radio on and listens to some classical music².</p> <p>After dinner, despite her eyesight problems, she will watch her favourite TV programme, 'country file',³ feed Tiger and take her evening pills.</p>	<ol style="list-style-type: none"> 1. Local public libraries in the UK, providing access to audio books and books in large print 2. English people of her generation and education prefer classical music 3. English TV programs related to nature, gardening, flowers, English country side and life.
Functional areas of the house involved	<p>F1. Living room</p> <p>F2. Bedroom</p>	
Relevant objects involved	<p>O1. TV</p> <p>O2. Radio</p> <p>O4. Remote control</p> <p>O6. Audio book</p> <p>O8. Armchair</p>	
Relevant persons (in addition to user and caregiver)	<p>B1. No-body</p>	
What a human (formal or informal) caregiver shall / can do in this scenario	<p>H1. Help her switch on the radio or TV and find the channel of her choice</p> <p>H2. Start the audio book from where she left off</p> <p>H3. Increase/decrease the volume as needed in different devices (TV, audio book, radio)</p> <p>H4. Read to her</p>	

	<p>H5. Keep company</p> <p>H6. Encourage her to read at least a few pages using a magnifying glass or reading light</p> <p>H7. Receive e-mail alerts from the library when new audio books come in</p> <p>H8. Find and suggest online reading resources according to her interests and favourite author</p>	
Cultural knowledge involved (top level concepts in the Cultural Knowledge hierarchy)	<p>C1. Knowledge that reading science/ ethics/ philosophy type of books, listening to classical music and watching TV programmes about the English countryside is part of Mrs S cultural identity</p> <p>C2. Knowing her favourite channels and TV programs and reminding her when they are on</p> <p>C3. Knowing her favourite classical music composers</p> <p>C4. Knowing her favourite authors</p> <p>C5. Knowledge about the system of public libraries and resources</p>	
Which “qualitative” caregiver behaviour is expected to be culturally dependent	<p>D1. Asking politely if she will need help with any of the activities (starting the TV or the radio, finding the channel)</p> <p>D2. Ask whether Mrs S would like some company or she would prefer to be alone</p> <p>D3. Polite encouragement to read and/or listen to her audio book</p>	
Which behaviour is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc.)	<p>E1. Polite and normal tone of voice</p> <p>E2. Move with normal speed in the house</p>	
Left: What the robot shall / can do in this scenario Right: Alternative tasks	<p>A1. Remind Mrs S that her favourite TV show is on (P4,P7,V3) [E]</p> <p>A2. Switch on/off TV/radio and choose appropriate channel /volume (M6,M7,P7) [H]</p> <p>A3. Provide privacy (M3,M5,P5) [E]</p> <p>A4. Ask Mrs S if she would like it to read an audiobook or listen some music (V2,V4,V5) [E]</p> <p>A5. Find online resources for audiobooks (P7,P8,V3) [E]</p> <p>A6. Locate things as needed (book, glasses, remote) (M3,M5,P5,P6) [H]</p> <p>A7. Bring things as needed (book, glasses, remote) (M1,M2,M3,M4,M5,P1,P5) [H]</p> <p>A8. Read the chosen audiobook (M8,V7) [E]</p> <p>A9. Encourage Mrs S to listen to her audio-book or to read few pages of a book (M8,P2,P3,V5) [E]</p> <p>A10. Remind Mrs S that she has received e-mails from the</p>	<p>A2'. Connect to internet Tv/radio and let Mrs C listen to her favorite radio program via the Pepper's loudspeakers/tablet.</p> <p>A6'+A7'. Tell Mrs S the positions of needed objects in the environment, knowing them a priori, or detecting them by using markers.</p> <p>A7''. Permanently attach a tray to the robot's chest to bring objects</p>

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

	<p>V5. Encourage/ praise (A4,A9)</p> <p>V6. Report information (A10)</p> <p>V7. Read audiobook (A8)</p>	<p>ALTextToSpeech, ALTabletService</p> <p>- ALDialog, ALTextToSpeech, ALTabletService</p> <p>- ALMemory, ALTextToSpeech, ALTabletService</p> <p>- AIAudioPlayer</p>
Which “qualitative” robot behaviour is expected to be culturally dependent	<p>R1. Asking politely</p> <p>R2. Reminding politely</p> <p>R3. Offering items gently (gentle gestures)</p> <p>R4. Provide privacy</p>	
Which behaviour is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc)	<p>T1. Speaks with normal tone</p> <p>T2. Speaks in normal volume</p> <p>T3. Walks in normal speed</p>	

4. MR SMITH - SCRIPT

Mr Smith is a 75 year old English gentleman, a former school teacher who recently moved in sheltered accommodation in Cambridge UK along with his beloved cat named 'tiger'¹. His wife died two years ago. He has only one son who lives with his new wife just over 3 hours away by car.

Mr Smith worked as a secondary school science teacher for nearly 40 years before he retired. Mr Smith has high blood pressure and diabetes for which he takes regular medication.

Recently, he developed cataract in both eyes which has affected his vision although the doctor told him they are not ready to be operated on. His visual impairment has resulted in losing his confidence leaving his home and he tends to stay indoors more and more.

Mr Smith always liked reading, something which he cannot easily do now and as a result he has to borrow audio books from the local library. He finds this fact frustrating and slightly depressing. Six months ago he had an accident by tripping over an uneven pavement, resulting in a fractured femur. Although he is now physically healed, he remains frightened in case he has another accident especially since his vision has deteriorated.

Today is Sunday and his son is due to visit him. His son tries to visit him every Sunday although he does not always have the time to do so. He occasionally telephones him although Mr Smith never does because he does not want to bother him².

He has a boiled egg with toast around 9am for breakfast³ while listening to the news on the radio. He would really like to have some bacon and sausages but it is more difficult for him to make it. He would also like to read the newspaper as he always has done but of course his vision does not permit it these days.

After breakfast, he gets dressed. He puts on his trousers, a shirt and a jumper. He combs his hair and he likes to use after shave. On Friday he had his monthly appointment with his barber. He likes to take care of himself. On Sundays he likes to wear a nice shirt, sometimes even his suit and his hat. He likes going to the barber and have a good shave and/or haircut.

Mr Smith was raised as an Anglican Protestant. However, as an adult, and during his science degree, he challenged his faith and religious beliefs and decided to abandon

1. *Common for older adults to have pets*
2. *Family expectations*
3. *Common foods for breakfast tea, toast, cereal/porridge, boiled eggs, fried/grilled bacon, sausage, baked beans, tomatoes*



religion. He does however, have strong humanistic values which he believes are compatible to Christianity and other religions such as Buddhism and Hinduism.

He doesn't belong to any church groups nor attends mass. He likes to read or listen to audio books about religion especially those that combine his love of science and ethics with religion. He is also an avid viewer of TV programmes that debate current ethical issues from religious and political perspectives.

He expects his son to arrive at 1pm and they will go to the local pub for Sunday roast lunch⁴. He arrives on time⁵. Mr S puts on his coat, gloves, takes an umbrella and the scrabble game for them to play^{6,7}. They spend together the next couple of hours. They play a game of scrabble and at the same time they talk about sports. They are both fans of football and cricket and by 3pm they return home. His son has to rush back, so they hug and say goodbye⁸.

Mr S comes in, takes off his shoes, puts on his slippers, sits on his armchair and covers himself with a blanket. He turns on the radio and soon he closes his eyes and takes a nap. Tiger snuggles up on his lap. He loves his cat, as he is his closest friend and they have been together for almost 15 years. He loves to caress his cat and relax.

It is afternoon now and he is expecting his friend, Mr Brown. They had arranged this visit the last time they talked over the phone, a month ago⁹. It will be lovely to see him. He will prepare two cups of tea and he will get some crackers and they will sit in the living room. They would both like to go to the local pub and have a beer but they need to be careful. They cannot eat and drink everything they like anymore. They will sit and talk about the old days when they were working together. They will also discuss his friend's recent holiday in Spain. They take a walk in the garden and talk about their recent hobbies. Mr S started going to his local bowlers club and he likes it. He has met some nice people there. After a couple of hours Mr Brown is ready to go. Mr S accompanies his friend to the door, say goodbye and they promise to talk soon on the phone and arrange another visit.

After his friend's departure Mr S turns the radio on and listens to some classical music.

It is time for dinner now and Mr S decides to have something light. He will have a ham salad¹⁰ with some lettuce, cucumber, tomato and a slice of bread with butter.

After dinner, despite his eyesight problems, he will watch his favourite TV programme, 'country file', feed Tiger and take his evening pills.

4. *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.*



5. *Cultural orientation to time*

6. *Common to share a board game such as scrabble*




7. *Not uncommon that the son visited without his wife*

8. *Greeting*

9. *Formal arranging of social visits*

10. *Light dinner, often a cold salad or sandwiches*

4.1 MR SMITH – MORNING ROUTINE, BREAKFAST

Scenario name	Mr Smith - Breakfast	
Time of the day	Morning	
General Description	<p><...> Mr S has a boiled egg with toast around 9am for breakfast¹ while listening to the news on the radio. He would really like to have some bacon and sausages but it is more difficult for him to make it. He would also like to read the newspaper and he always did but of course her vision does not permit it these days. So he hears the news on the radio, and of course he also hears the weather report³.</p> <p>He will also find his tablets and put them on the table in order not to forget to take them when he finishes his breakfast.</p> <p>Another routine would be to feed Tiger² his cat and since he is a very important cat he gets his food first!</p>	<p>1. Common foods for breakfast (tea, toast, cereal/porridge, boiled eggs, fried/grilled bacon, sausage, baked beans, tomatoes)</p>  <p>2. Many English people, especially older people living alone are very attached to their animals (cats or dogs).</p> <p>3. 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.</p>
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	B1. No-one	

caregiver)		
What a human (formal or informal) caregiver shall / can do in this scenario	<ul style="list-style-type: none"> H1. Say Good morning H2. Ask what Mr 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 H8. Ask whether he would like to have tea or coffee or juice H9. Make tea of coffee H10. Switch on the radio H11. Ask Mr S what radio channel he would like to listen H12. Reminder him about his medication H13. Fill cat's dish with cat food H14. Wash cat's water dish and fill up with clean water 	
Cultural knowledge involved (top level concepts in the Cultural Knowledge hierarchy)	<ul style="list-style-type: none"> C1. English breakfast dishes and preferences C2. Names of different English breakfast dishes C3. Knowledge of English cooking C4. Names of different English radio channels and programmes 	
Which "qualitative" caregiver behaviour is expected to be culturally dependent	<ul style="list-style-type: none"> D1. English breakfast and what it could entail D2. Awareness of Mr S preferences (having toast, or eggs or bacon , tea /coffee etc) D3. Awareness of where Mr S likes to take his breakfast D4. Preferences of news/radio channels D5. Understand the importance of the cat to Mr S. D6. Polite and respectful way of addressing Mr S. 'Please' and 'Thank you' prefix most dialogue. 	
Which behavior is "quantitatively" different depending on culture (volume and tone of voice, distance, velocity, etc.)	<ul style="list-style-type: none"> E1. Normal volume of voice E2. Moving about at normal speed, looking efficient E3. Not many gestures 	
Left: What the robot shall / can do in this scenario Right: Alternative tasks	<ul style="list-style-type: none"> A1. Greet Mr S, saying "Good Morning" and asking him how he is feeling today (M5,M9,P1,P2,P4,V2,V4,V5) [E] A2. Provide a list of choices that Mr S can have for breakfast and ask him what he wants for breakfast (P7,V2,V3) [E] A3. Praise on eating a healthy and balanced diet (V4,V6) [E] 	<p>A5'+A6'. Tell Mr S the positions of needed objects in the environment, knowing them a priori, or detecting them by using markers.</p> <p>A7'+A8'. Locate and indicate objects</p>

	<p>A4. Ask Mr S if she needs help for preparing breakfast (P3,V1) [E] A5. Locate objects as needed (plates, glasses, pots, cat food) (M4,M6,P5,P6) [H] A6. Bring objects as needed (plates, glasses, pots, cat food) (M1,M2,M4,M5,M6,P1,P5) [H] A7. Prepare a tray with food (M1,M2,P6) [H] A8. Bring the tray with food to Mr S to the table (M1,M2,M3,M4,M5,M6,P1,P5,P6) [H] A9. Remind him to take his medication if needed (P7,P8,V3) [E] A10. Respond to his request to hear the news on the radio (M7,M8) [H] A11. Keep company to Mr S while eating (M5,P2,P3,V4) [E] A12. Ask Mr S if he enjoyed his breakfast and comment on his dietary choices (M9,P2,P3,V1,V2,V4) [H] A13. Remind his to feed his cat and ask him if he needs help in bringing cat food (P7,V1,V3,V4,V6) [E] A14. Inform Mr S if he has any text /telephone messages and read them to him (M8,P7,V7) [H] A15. Provide information about the weather (P7,P9,V4,V7) [E] A16. Provide information on supplies (e.g. cat food) and whether they need to order/buy (M8,P7,V4,V7) [H]</p>	<p>needed for preparing the tray, knowing their position in the environment, or using markers Suggest Mr S to bring the tray with food to the table A6''+A8''. Permanently attach a tray to the robot's chest to bring objects A10'. Ask Mr S if he wants to hear the news. If yes, connect to his favorite (known a priori) internet radio channel. A10''. Ask Mr S if he wants to hear radio and the type of music. Then, reproduce the selected radio channel A12'. Provide general comments about breakfast and diet A14'. Check email or events from apps such as Whatsapp / Viber A16'. Suggest Mr S to check supplies and if missing to generate a reminder for buying/ordering them.</p>
<p>Left: Robot motor capabilities required Right: Corresponding Pepper API (if any)</p>	<p>M1. Grasp objects (A6,A7,A8) M2. Carry lightweight items (A6,A7,A8) M3. Carry heavyweight items (A8) M4. Navigate autonomously in the house (A5,A6,A8) M5. Reach a target / person (A1,A6,A8,A11) M6. Avoid unexpected static or moving obstacles / persons (A5,A6,A8) M7. Turn on radio / TV /cassette player (A10)</p>	<ul style="list-style-type: none"> - no dedicated module, it could be achieved with external libraries - feasible if payload is <300 g - not feasible - ALNavigation - ALVisionRecognition, ALCloseObjectDetection, ALNavigation - ALMotion - ALAudioPlayer <p>For external devices, It could be achieved with a specific communication protocol</p>

	<p>M8. Operate appliance (by communicating with smart environment) (A10,A14,A16)</p> <p>M9. Show feelings (A1,A12)</p>	<ul style="list-style-type: none"> - It could be achieved with a specific communication protocol - ALLeds, ALRobotPosture, ALAnimationPlayer
<p>Left: Robot perceptual capabilities required</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>P1. Locate persons (distance and position) (A1,A6,A8)</p> <p>P2. Recognize emotions (A1,A11,A12)</p> <p>P3. Recognize actions (A4,A11,A12)</p> <p>P4. Recognize persons / faces (A1)</p> <p>P5. Recognize obstacles / uneven ground (A5,A6,A8)</p> <p>P6. Recognize/ Locate items (A5,A7,A8)</p> <p>P7. Retrieve / store information (A2,A9,A13,A14,A15,A16)</p> <p>P8. Keep track of time (A9)</p> <p>P9. Recognize weather/ temperature (A15)</p>	<ul style="list-style-type: none"> - ALPeoplePerception - ALMood - no dedicated module, it could be achieved with external libraries - ALFaceDetection - ALLaser, ALSonar - ALVisionRecognition - ALMemory - no dedicated module, it could be achieved with different solutions - no dedicated module, it could be checked the broadcast on internet or by communicating with the smart environment
<p>Left: Robot verbal capabilities involved</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>V1. Ask Yes/ No questions (A4,A12,A13)</p> <p>V2. Ask multiple choice questions (A1,A2)</p> <p>V3. Suggest / remind (A2,A9,A13,A16)</p> <p>V4. Context dependent chat (A1,A3,A11,A12,A13,A15,A16)</p> <p>V5. Greet (A1)</p> <p>V6. Encourage/ praise (A3,A13)</p> <p>V7. Report information (A14,A15,A16)</p>	<ul style="list-style-type: none"> - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech - ALDialog, ALTextToSpeech, ALTabletService - ALMemory, ALTextToSpeech, ALTabletService
<p>Which “qualitative” robot behavior is expected to be culturally dependent</p>	<p>R1. Polite way of asking and interacting</p> <p>R2. Waits for his instructions</p> <p>R3. Awareness of Mr S preferences (having toast, or eggs or bacon , tea /coffee etc)</p> <p>R4. Awareness of where Mr S likes to take his breakfast</p>	

	R5. Preferences of news/radio channels
Which behavior is “quantitatively” different depending con culture (volume and tone of voice, distance, velocity, etc)	T1. Speaks with normal tone T2. Speaks in normal volume T3. Walks in normal speed T4. Not too many gestures T5. Stands not too close to Mr S

4.2 MR SMITH - MORNING ROUTINE, DRESSING

Scenario name	Mr Smith - Morning routine, Dressing	
Time of the day	Morning	
General Description	<.....> After breakfast, he gets dressed. He puts on his trousers, a shirt and a jumper ¹ . He combs his hair and he likes to use after shave. On Friday he had his monthly appointment with his barber.	1. <i>Items of western clothing</i>
Functional areas of the house involved	F1. Bedroom - Bed F2. Bedroom – Wardrobe F3. Bedroom – Drawers F4. Bedroom - dressing table	
Relevant objects involved	O1. Trouser, shirt, jumper O2. After- shave	
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. Asks Mr S if he would like help with choosing his clothes H2. Recommend clothes and propose combinations H3. Help him find his clothes H4. Help Mr S to wear clothes, if he needs help (e.g., by holding, handing) H5. Praise Mr S for dressing up nicely H6. Suggest to put on after shave H7. Bring comb H8. Recommend shoes	
Cultural knowledge involved (top level concepts in the Cultural Knowledge hierarchy)	C1. Western items of clothing C2. Culture of getting ready (e.g. shaving, using after-shave, going to the barber)	
Which “qualitative” caregiver behavior is expected to be culturally dependent	D1. Ask permission to enter bedroom and offer help. Maintain a distance from M S D2. Praise in a discrete way (Is it appropriate to praise?) D3. Time taken to get dressed (not too long) D4. Looking good, having hair and nails done is considered important	

	D5. Remember her favourite clothes and perfumes	
Which behavior is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc.)	E1. Polite and normal tone of voice E2. Moving about at normal speed, looking efficient	
Left: What the robot shall / can do in this scenario Right: Alternative tasks	<p>A1. Locate objects if needed (trouser, shirt, jumper, , comb) (M5,M8,P5,P6) [H]</p> <p>A2. Bring objects if needed (trouser, sshirt, jumper,)comb) (M2,M3,M4,M5,M6,M8,P1,P5) [H]</p> <p>A3. Recommend clothes and propose some combinations (P4,P7,V1,V2,V3) [E]</p> <p>A4. Open wardrobe with clothes (M1,M2,M6,M7,M8,M9,P5,P6) [H]</p> <p>A5. Ask Mr S if he needs help while getting dressed (P2,P4,V1,V4) [E]</p> <p>A6. Help Mr S to get dressed by holding the clothes (M1,M2,M3,M6,M8,P1,P2,P5,P6) [H]</p> <p>A7. Switch on/off the lights when asked (M10) [H]</p> <p>A8. Provide privacy to Mr S (M5,P4) [E]</p> <p>A9. Show interest and ask information about English way of dressing (M11,P7,V1,V2,V4) [E]</p> <p>A10. Make recommendations (on shirt, jumper) (P7,P8,V3,V4,V5) [E]</p> <p>A11. Praise Mr S for taking care of himself (M11,P3,V4,V5) [E]</p> <p>A12. Remind Mr S his monthly appointment with the barber (P7,V3,V4) [E]</p>	<p>A1'+A2'. Tell Mrs S the positions of needed objects in the environment, knowing them a priori, or detecting them by using markers.</p> <p>A2''. Permanently attach a tray to the robot's chest to bring objects</p> <p>A4'. Open the wardrobe, by controlling its sliding doors by communicating with the smart home</p> <p>A6'. Bring a hanger (on wheels) close to Mrs S, and then bring it back to its place again.</p> <p>A7'. Connect to automatic controls of lights.</p>
Left: Robot motor capabilities required Right: Corresponding Pepper API (if any)	<p>M1. Coordinately move base/ arms/ hands (A4,A6)</p> <p>M2. Grasp objects (A2,A4,A6)</p> <p>M3. Carry lightweight items (A2,A6)</p> <p>M4. Carry heavyweight items (A2)</p>	<p>- ALMotion</p> <p>- no dedicated module, it could be achieved with external libraries</p> <p>- feasible if payload is <300 g</p> <p>- not feasible</p>

	<p>M5. Navigate autonomously in the house (A1,A2,A8)</p> <p>M6. Reach a target / person (A2,A4,A6)</p> <p>M7. Pull objects (A4)</p> <p>M8. Avoid unexpected static or moving obstacles / persons (A1,A2,A4,A6)</p> <p>M9. Open doors / windows (by communicating with smart environment) (A4)</p> <p>M10. Operate appliance (by communicating with smart environment) (A7)</p> <p>M11. Show feelings (A9,A11)</p>	<ul style="list-style-type: none"> - ALNavigation - ALVisionRecognition, ALCloseObjectDetection, ALNavigation - no dedicated module, it could be achieved with external libraries - ALMotion - It could be achieved with a specific communication protocol - It could be achieved with a specific communication protocol - ALLeds, ALRobotPosture, ALAnimationPlayer
<p>Left: Robot perceptual capabilities required</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>P1. Locate persons (distance and position) (A2,A6)</p> <p>P2. Recognize posture, gesture, movements (A5,A6)</p> <p>P3. Recognize emotions (A11)</p> <p>P4. Recognize actions (A3,A5,A8)</p> <p>P5. Recognize obstacles / uneven ground (A1,A2,A4,A6)</p> <p>P6. Recognize/ Locate items (A1,A4,A6)</p> <p>P7. Retrieve / store information (A3,A9,A10,A12)</p> <p>P8. Recognize weather/ temperature (A10)</p>	<ul style="list-style-type: none"> - ALPeoplePerception - no dedicated module, it could be achieved with external libraries - ALMood - no dedicated module, it could be achieved with external libraries - ALLaser, ALSonar - ALVisionRecognition - ALMemory - no dedicated module, it could be checked the broadcast on internet or by communicating with the smart environment
<p>Left: Robot verbal capabilities involved</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>V1. Ask Yes/ No questions (A3,A5,A9)</p> <p>V2. Ask multiple choice questions (A3,A9)</p> <p>V3. Suggest / remind (A3,A10,A12)</p> <p>V4. Context dependent chat (A5,A9,A10,A11,A12)</p> <p>V5. Encourage/ praise (A10,A11)</p>	<ul style="list-style-type: none"> - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech,

		ALTabletService
Which “qualitative” robot behavior is expected to be culturally dependent	<ul style="list-style-type: none"> R1. Way of dressing R2. Type of clothes depending on the occasion R3. May have to leave the room when Mr S is changing R4. Provide privacy 	
Which behavior is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc)	<ul style="list-style-type: none"> T1. Speaks with normal tone T2. Speaks with normal volume T3. Walks in normal speed 	



4.3 MR SMITH – PRE LUNCH ROUTINE, PRAY

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

<p>“quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc.)</p>	<p>E2. Keeping quiet whilst he is listening/watching a programme</p>	
<p>Left: What the robot shall / can do in this scenario Right: Alternative tasks</p>	<p>A1. Ask Mr S if he would like to choose an online book or TV programme from his tablet list (M1,M2,M3,P1,P2,P3,P4,V1) [E] A2. In case, show to Mr 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 his request (M6,V6) [E] A6. Comment on the chosen TV/Radio show or audiobook (M6,P5,P6,V2,V4) [E]</p>	<p>A3'. Connect to internet radio TV and let Mr S watch his favorite TV program via the Pepper's screen.</p>
<p>Left: Robot motor capabilities required Right: Corresponding Pepper API (if any)</p>	<p>M1. Navigate autonomously in the house (A1,A4) M2. Reach a target / person (A1) M3. Avoid unexpected static or moving obstacles / persons (A1) M4. Turn on radio / TV /cassette player (A3) M5. Operate appliance (by communicating with smart environment) (A3) M6. Show feelings (A5,A6)</p>	<ul style="list-style-type: none"> - ALNavigation - ALVisionRecognition, ALCloseObjectDetection, ALNavigation - ALMotion - ALAudioPlayer For external devices, It could be achieved with a specific communication protocol - It could be achieved with a specific communication protocol - ALLeds, ALRobotPosture, ALAnimationPlayer
<p>Left: Robot perceptual capabilities required Right: Corresponding Pepper API (if any)</p>	<p>P1. Locate persons (distance and position) (A1) P2. Recognize actions (A1,A4) P3. Recognize persons / faces (A1) P4. Recognize obstacles / uneven ground (A1) P5. Retrieve / store information (A2,A6) P6. Recognize dialogue context (A6)</p>	<ul style="list-style-type: none"> - ALPeoplePerception - no dedicated module, it could be achieved with external libraries - ALFaceDetection - ALLaser, ALSonar - ALMemory - ALSpeechRecognition

<p>Left: Robot verbal capabilities involved Right: Corresponding Pepper API (if any)</p>	<p>V1. Ask Yes/ No questions (A1) V2. Ask multiple choice questions (A6) V3. Suggest / remind (A2) V4. Context dependent chat (A6) V5. Report information (A2) V6. Read an audiobook (A5)</p>	<p>- ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALMemory, ALTextToSpeech, ALTabletService - ALAudioPlayer</p>
<p>Which “qualitative” robot behavior is expected to be culturally dependent</p>	<p>R1. Showing respect to Mr S values and beliefs</p>	
<p>Which behavior is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc)</p>	<p>T1. Speaks with soft tone T2. Speaks in low volume T3. Walks in low speed</p>	

4.4 MR SMITH – LUNCH ROUTINE, SON, SOCIAL ACTIVITY

Scenario name	Mr Smith – Lunch routine, Son, social activity	
Time of the day	Lunch time	
General Description	<p><...> Today is Sunday and his son is due to visit him. He tries to visit him every Sunday although he does not always has the time to do so. He occasionally telephones him although he never does, because he does not want to bother him¹.</p> <p>He expects his son to arrive at 1pm and they will go to the local pub for Sunday roast lunch². He arrives on time³. He puts on his coat, gloves, takes his umbrella and scrabble for them to play^{4,5}. They spend together the next couple of hours together. They play a game of scrabble and at the same time they talk about sports. They are both fans of football and cricket and by 3pm they return to his home. He has to rush back so they say goodbye.</p>	<p>1. Family expectations</p> <p>2. 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.</p>  <p>3. Cultural orientation to time</p> <p>4. Common to share a board game such as scrabble</p>  <p>5. Not uncommon that the son visited without his wife</p>
Functional areas of the house involved	<p>F1. Entrance</p> <p>F2. Living room</p>	
Relevant objects involved	<p>O1. Shoes</p> <p>O2. Coat</p>	

	<ul style="list-style-type: none"> O3. Gloves O4. Coat stand O5. Umbrella O6. Umbrella holder O7. Board game O8. Food
Relevant persons	B1. Son (informal carer)
What a human (formal or informal) caregiver shall / can do in this scenario	<ul style="list-style-type: none"> H1. Inform him that his son arrived H2. Open the door and greet son H3. Welcome him indoors H4. Help him put on his shoes, or give the shoes H5. Give the gloves and umbrella H6. Remind him to take the board game H7. Bring and give the board game H8. Help him put on his coat H9. Provide some privacy to father and son
Cultural knowledge involved (top level concepts in the Cultural Knowledge hierarchy)	<ul style="list-style-type: none"> C1. Greeting customs C2. Level of communication and detail of exchange of information C3. Son /parent relationship in English culture C4. Custom of playing a game together C5. Family expectations (e.g. son may visit alone without his wife, father may not call very often so that he will not bother) C6. Length of visit (based on a time schedule; to some extent timed 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” caregiver behaviour is expected to be culturally dependent	<ul style="list-style-type: none"> D1. Way of greeting with family members D2. Distance from visitor and minimal involvement in the son-father conversation D3. Constraint expression of emotion between father-son D4. Touching not desirable for non-family members
Which behaviour is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc.)	<ul style="list-style-type: none"> E1. Polite and brief conversation E2. Carer keeps some physical and conversational distance from father-son E3. Moving about in a discrete manner E4. Not much gesturing

<p>Left: What the robot shall / can do in this scenario Right: Alternative tasks</p>	<p>A1. Comments on Mr S smart appearance (P3,P5,V4) [E] A2. Remind Mr S that his son will come to visit him at 13:00 (P8,V3,V6) [E] A3. Open the door and greet the visitor (shake hand) (M1,M4,M6,M7,M8,P1,P2,P5,P6,V5) [H] A4. Welcome the son indoor (M9,V1,V2,V4) [E] A5. Inform Mr S that his son arrived (M6,M7,P1,P6,V6) [E] A6. Leave privacy to father and son (M4,M7,P6) [E] A7. Locate things as needed (shoes, coat, gloves, umbrella, etc) (M4,M7,P6,P7) [H] A8. Bring things as needed (shoes, coat, gloves, umbrella, etc) (M2,M3,M4,M6,M7,P1,P6) [H] A9. Provide information about the weather (P10,V4,V6) [E] A10. Remind Mr S to take a board game and suggest games that they can play together (P4,P8,V3,V6) [E] A11. Take a photo of father and son (M5,M9,P1,P11) [E] A12. Help Mr S to put the coat on (M1,M2,M3,M6,P1,P2,P7) [H] A13. While still at home, if father 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 Mr S is back, ask him about his lunch and his son's visit (M9,P3,V1,V2,V4) [E] A15. Ask Mr S when he will see the son again and store the information about son's next visit (P8,V2,V4) [E]</p>	<p>A3'. Open door by communicating with the smart environment. Ask the visitor to come closer for shaking hands A7'+A8'. Tell Mr S the positions of needed objects in the environment, knowing them a priori, or detecting them by using markers. A8''. Permanently attach a tray to the robot's chest to bring objects A12'. Bring a hanger (on wheels) with coat close to Mr S, and then bring it back to its place again.</p>
<p>Left: Robot motor capabilities required Right: Corresponding Pepper API (if any)</p>	<p>M1. Coordinately move base/ arms/ hands (A3,A12) M2. Grasp objects (A8,A12) M3. Carry lightweight items (A8,A12) M4. Navigate autonomously in the house (A3,A6,A7,A8) M5. Track moving objects / persons (A11) M6. Reach a target / person (A3,A5,A8,A12)</p>	<ul style="list-style-type: none"> - ALMotion - no dedicated module, it could be achieved with external libraries - feasible if payload is <300 g - ALNavigation - ALLandmarkDetection, ALColorBlobDetection, ALVisionRecognition, ALCloseObjectDetection - ALVisionRecognition,

	<p>M7. Avoid unexpected static or moving obstacles / persons (A3,A5,A6,A7,A8)</p> <p>M8. Open doors / windows (by communicating with smart environment) (A3)</p> <p>M9. Show feelings (A4,A11,A14)</p>	<p>ALCloseObjectDetection, ALNavigation - ALMotion</p> <p>- It could be achieved with a specific communication protocol</p> <p>- ALLeds, ALRobotPosture, ALAnimationPlayer</p>
<p>Left: Robot perceptual capabilities required Right: Corresponding Pepper API (if any)</p>	<p>P1. Locate persons (distance and position) (A3,A5,A8,A11,A12)</p> <p>P2. Recognize posture, gesture, movements (A3,A12)</p> <p>P3. Recognize emotions (A1,A14)</p> <p>P4. Recognize actions (A10)</p> <p>P5. Recognize persons / faces (A1,A3)</p> <p>P6. Recognize obstacles / uneven ground (A3,A5,A6,A7,A8)</p> <p>P7. Recognize/ Locate items (A7,A12)</p> <p>P8. Retrieve / store information (A2,A10,A13,A15)</p> <p>P9. Recognize dialogue context (A13)</p> <p>P10. Recognize weather/ temperature (A9)</p> <p>P11. Take pictures (A11)</p> <p>P12. Use search engines for finding information (A13)</p>	<p>- ALPeoplePerception</p> <p>- no dedicated module, it could be achieved with external libraries</p> <p>- ALMood</p> <p>- no dedicated module, it could be achieved with external libraries</p> <p>- ALFaceDetection</p> <p>- ALLaser, ALSonar</p> <p>- ALVisionRecognition</p> <p>- ALMemory</p> <p>- ALDialog, ALAudioPlayer</p> <p>- no dedicated module, it could be checked the broadcast on internet or by communicating with the smart environment</p> <p>- ALPhotoCapture</p> <p>- ALTabletService</p>
<p>Left: Robot verbal capabilities involved Right: Corresponding Pepper API (if any)</p>	<p>V1. Ask Yes/ No questions (A4,A14)</p> <p>V2. Ask multiple choice questions (A4,A14,A15)</p> <p>V3. Suggest / remind (A2,A10,A13)</p> <p>V4. Context dependent chat (A1,A4,A9,A13,A14,A15)</p> <p>V5. Greet (A3)</p> <p>V6. Report information (A2,A5,A9,A10,A13)</p>	<p>- ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService</p> <p>- ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService</p> <p>- ALDialog, ALTextToSpeech, ALTabletService</p> <p>- ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService</p> <p>- ALDialog, ALTextToSpeech</p> <p>- ALMemory, ALTextToSpeech, ALTabletService</p>

Which “qualitative” robot behavior is expected to be culturally dependent	R1. Way of greeting –extends right hand R2. Provides privacy R3. Behaves in a very polite manner
Which behavior is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc)	T1. Speaks with normal tone T2. Speaks in normal volume T3. Walks in normal speed T4. Stands not too close to Mr S T5. Keeps acceptable distance from the visitor T6. Not too many gestures T7. Is silent when needed

4.5 MR SMITH - AFTER LUNCH ROUTINE, NAP

Scenario name	Mr Smith - After Lunch routine->nap	
Time of the day	Early afternoon	
General Description	<p><...> Mr S comes in, takes off his shoes, puts on his slippers, sits on his armchair and covers himself with a blanket. He turns on the radio and soon he closes his eyes and takes a nap. Tiger snuggles up on his lap. He loves his cat, as he is his closest friend and they have been together for almost 15 years. He loves to caress his cat and relax.</p>	<p>1. <i>His cat</i> 2. <i>Common to have a pet</i></p>
Functional areas of the house involved	F1. Living room or bedroom/living area	
Relevant objects involved	<p>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)</p>	
Relevant persons (in addition to user and caregiver)	B1. No-one	
What a human (formal or informal) caregiver shall / can do in this scenario	<p>H1. Help him put the slippers on H2. Bring the blanket H3. Know the radio channel he would usually have play in the background H4. If Tiger is outside call him to come in and encourage him to sit on his lap H5. Don't disturb his nap but keep track of time H6. If he usually takes a nap for 30 minutes, make sure that he gently wakes up and don't let him stay in the chair for hours.</p>	
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 expected to be culturally dependent	D2. Attitude towards his pet D3. Politeness as a key value	
Which behaviour is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc.)	E1. Normal volume of voice E2. Respectful tone of voice E3. Respecting his personal space E4. Moving about at normal speed E5. Not too many gestures	
Left: What the robot shall / can do in this scenario Right: Alternative tasks	A1. Suggest to M S a short nap (M4,M8,P1,P3,P5,V3) [E] A2. Ask if M S is warm enough (P2,P3,P4,P10,V1,V2,V4) [E] A3. Locate objects as needed (blanket, slippers) (M3,M5,P6,P7) [H] A4. Bring objects as needed (blanket, slippers) (M1,M2,M3,M4,M5,P1,P6) [H] A5. Ask Mr S if he would like some background music (P4,V1,V3) [E] A6. Switch radio on/off, putting the appropriate channel (M6,M7,P8) [H] A7. Ask Mr S if he prefer to be woken up after some time and provide privacy (M3,V1) [E] A8. Keep track of time and eventually gently wake up Mr S if he sleeps for more than the required time (P9,V3,V5) [E] A9. Locate Tiger the cat, and encourage him to sit on his lap (M3,M5,P6,P7,V5) [H] A10. Remind Mr S to move, to feed the cat and ask if he needs any help (M8,P4,P8,V3,V4,V5) [E]	A3'+A4'. Tell Mr S the positions of needed objects in the environment, knowing them a priori, or detecting them by using markers. A4''. Permanently attach a tray to the robot's chest to bring objects A6'. Connect to his favorite (known a priori) internet radio channel. A5'+A6''. Ask Mr S if he wants to hear radio and the type of music. Then, reproduce the selected radio channel A9'. Call Tiger the cat, and encourage him to sit on his lap
Left: Robot motor capabilities required Right: Corresponding Pepper API (if any)	M1. Grasp objects (A4) M2. Carry lightweight items (A4) M3. Navigate autonomously in the house (A3,A4,A7,A9) M4. Reach a target / person (A1,A4) M5. Avoid unexpected static or moving obstacles / persons (A3,A4,A9) M6. Turn on radio / TV /cassette player (A6)	- no dedicated module, it could be achieved with external libraries - feasible if payload is <300 g - ALNavigation - ALVisionRecognition, ALCloseObjectDetection, ALNavigation - ALMotion - ALAudioPlayer

	<p>M7. Operate appliance (by communicating with smart environment) (A6)</p> <p>M8. Show feelings (A1,A10)</p>	<p>For external devices, It could be achieved with a specific communication protocol</p> <ul style="list-style-type: none"> - It could be achieved with a specific communication protocol - ALLeds, ALRobotPosture, ALAnimationPlayer
<p>Left: Robot perceptual capabilities required</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>P1. Locate persons (distance and position) (A1,A4)</p> <p>P2. Recognize posture, gesture, movements (A2)</p> <p>P3. Recognize emotions (A1,A2)</p> <p>P4. Recognize actions (A2,A5,A10)</p> <p>P5. Recognize persons / faces (A1)</p> <p>P6. Recognize obstacles / uneven ground (A3,A4,A9)</p> <p>P7. Recognize/ Locate items (A3,A9)</p> <p>P8. Retrieve / store information (A6,A10)</p> <p>P9. Keep track of time (A8)</p> <p>P10. Recognize weather/ temperature (A2)</p>	<ul style="list-style-type: none"> - ALPeoplePerception - no dedicated module, it could be achieved with external libraries - ALMood - no dedicated module, it could be achieved with external libraries - ALFaceDetection - ALLaser, ALSonar - ALVisionRecognition - ALMemory - no dedicated module, it could be achieved with different solutions - no dedicated module, it could be checked the broadcast on internet or by communicating with the smart environment
<p>Left: Robot verbal capabilities involved</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>V1. Ask Yes/ No questions (A2,A5,A7)</p> <p>V2. Ask multiple choice questions (A2)</p> <p>V3. Suggest / remind (A1,A5,A8,A10)</p> <p>V4. Context dependent chat (A2,A10)</p> <p>V5. Encourage/ praise (A8,A9,A10)</p>	<ul style="list-style-type: none"> - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech, ALTabletService
<p>Which “qualitative” robot behavior is expected to be</p>	<p>R1. Cat/Mr S relationship</p> <p>R2. Which radio programme he has on and what he listens to</p>	

culturally dependent	
Which behavior is “quantitatively” different depending con culture (volume and tone of voice, distance, velocity, etc)	T1. Speaks with normal tone T2. Speaks in normal volume T3. Walks in normal speed T4. Stands not too close to Mr S

4.6 MR SMITH - AFTER LUNCH ROUTINE, SOCIAL ACTIVITIES (DRINKING TEA, VISITORS, TALKING)

Scenario name	Mr Smith - After lunch routine, Social activities (drinking tea, visitors, talking)	
Time of the day	Early afternoon	
General Description	<p><.....> It is afternoon now and he is expecting his friend, Mr Brown. They had arranged this visit the last time they talked over the phone, a month ago¹. It will be lovely to see him. He will prepare two cups of tea and he will get some crackers and they will sit in the living room. They would both like to go to the local pub and have a beer but they need to be careful. They cannot eat and drink everything they like anymore. They will sit and talk about the old days when they were working together. They will also discuss his friend's recent holiday in Spain. They take a walk in the garden and talk about their recent hobbies. Mr S started going to his local bowlers club² and he likes it. He has met some nice people there. After a couple of hours Mr Brown is ready to go. Mr S accompanies his friend to the door, say goodbye and they promise to talk soon on the phone and arrange another visit.</p>	<p>1. <i>Formal arranging of social visits</i></p> <p>2. <i>Common to be involved in a local club</i></p>
Functional areas of the house involved	<p>F1. Living room</p> <p>F2.</p>	
Relevant objects involved	<p>O1. Door</p> <p>O2. Cups, spoons</p> <p>O3. Crackers</p>	
Relevant persons (in addition to user and	<p>B1. Friend</p>	

caregiver)		
What a human (formal or informal) caregiver shall / can do in this scenario	<ul style="list-style-type: none"> H1. Open the door for visitor and greet appropriately H2. Welcome the visitor H3. Ask whether he would like to take his coat off H4. Take his coat and hang it or place it to the appropriate place H5. Help in the kitchen by getting the cups, plates, etc H6. Help by making the tea H7. Help with the crackers H8. Help bring everything to the living room 	
Cultural knowledge involved (top level concepts in the Cultural Knowledge hierarchy)	<ul style="list-style-type: none"> C1. Knowledge of different ways of making and having tea such as (Cream Tea, High Tea, Tea as light dinner; knowing distinctions) C2. Crackers and other appropriate foods such as tea biscuits C3. cups C4. Organized visit well in advance C5. Expected to offer one item, e.g. tea and maybe have some biscuits C6. What is expected from the visitor C7. Level of communication, topics of discussion C8. Organizing the next visit and marking their calendar 	
Which “qualitative” caregiver behavior is expected to be culturally dependent	<ul style="list-style-type: none"> D1. Proper way of greeting D2. Properly addressing the visitor D3. Properly addressing Mr S 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. Bring out crackers D10. Washes dishes D11. Touching not desirable for non-family members 	
Which behavior is “quantitatively” different depending con culture (volume and tone of voice, distance, velocity, etc.)	<ul style="list-style-type: none"> E1. Polite and soft tone of voice E2. Keep some distance for non-family members E3. Move gently and with low velocity E4. Smile 	
Left: What the robot shall /	A1. Open the door and greet the visitor (slight bow)	A1’. Open the door by communicating

<p>can do in this scenario Right: Alternative tasks</p>	<p>(M1,M6,M7,M8,M9,P1,P5,P6,V5) [H]</p> <p>A2. Welcome the visitor indoor, showing with the hand the way to the living room (M2,M6,M8,M10,P6,P10,V1,V2,V4) [E]</p> <p>A3. Take visitor's coat and suggest her to sit (M2,M3,M4,M7,M8,P1,P2,P6,P7,V3) [H]</p> <p>A4. Offer to take from Mr B (friend/visitor) the package that he has brought (assuming box with scones) and take it. (M3,M4,M7,M8,P1,P2,P6,P7,V1) [H]</p> <p>A5. Inform Mr S that his friend has arrived (M7,M8,P6,V4,V7) [E]</p> <p>A6. Ask Mr S how it can help with the tea (P9,V1,V2) [E]</p> <p>A7. Locate things as needed (cups, crackers) (M6,M8,P6,P7) [H]</p> <p>A8. Bring things as needed (cups, crackers) (M3,M4,M6,M7,M8,P1,P6) [H]</p> <p>A9. Prepare a tray with tea cups and crackers (M3,M4,P7) [H]</p> <p>A10. Bring the tray in the living room (M3,M5,M6,M7,M8,P1,P6) [H]</p> <p>A11. Ask if they would like anything else to bring or do (P9,V4) [E]</p> <p>A12. Provide privacy to Mr S and friend (M6,P4) [E]</p> <p>A13. Suggest Mr S to arrange another visit with his friend (M10,P3,V3,V6) [E]</p> <p>A14. In case, retrieve his calendar, suggest a date and store the information (P8,V3,V4)[E]</p> <p>A15. Remind both of any occasions that they would like to celebrate or recommend things to do at the next visit (P8,V3,V4) [E]</p>	<p>with the smart environment and greet the visitor (slight bow)</p> <p>A3'. Show the visitor where to hang coat and suggest to sit</p> <p>A4'. Suggest the visitor to put the box on the table</p> <p>A7'+A8'. Tell Mrs S the positions of needed objects in the environment, knowing them a priori, or detecting them by using markers.</p> <p>A9'+A10'. Locate and indicate objects needed for preparing the tray, knowing their position in the environment, or using markers. Suggest Mrs S to bring the tray with food to the table</p> <p>A8''+A10''. Permanently attach a tray to the robot's chest to bring objects</p>
<p>Left: Robot motor capabilities required Right: Corresponding Pepper API (if any)</p>	<p>M1. Coordinately move torso/ arms/ hands (A1)</p> <p>M2. Coordinately move base/ arms/ hands (A2,A3)</p> <p>M3. Grasp objects (A3,A4,A8,A9,A10)</p> <p>M4. Carry lightweight items (A3,A4,A8,A9)</p> <p>M5. Carry heavyweight items (A10)</p> <p>M6. Navigate autonomously in the house</p>	<p>- ALMotion</p> <p>- ALMotion</p> <p>- no dedicated module, it could be achieved with external libraries</p> <p>- feasible if payload is <300 g</p> <p>- not feasible</p> <p>- ALNavigation</p>

	<p>(A1,A2,A7,A8,A10,A12)</p> <p>M7. Reach a target / person (A1,A3,A4,A5,A8,A10)</p> <p>M8. Avoid unexpected static or moving obstacles / persons (A1,A2,A3,A4,A5,A7,A8,A10)</p> <p>M9. Open doors / windows (by communicating with smart environment) (A1)</p> <p>M10. Show feelings (A2,A13)</p>	<ul style="list-style-type: none"> - ALVisionRecognition, ALCloseObjectDetection, ALNavigation - ALMotion - It could be achieved with a specific communication protocol - ALLeds, ALRobotPosture, ALAnimationPlayer
<p>Left: Robot perceptual capabilities required Right: Corresponding Pepper API (if any)</p>	<p>P1. Locate persons (distance and position) (A1,A3,A4,A8,A10)</p> <p>P2. Recognize posture, gesture, movements (A3,A4)</p> <p>P3. Recognize emotions (A13)</p> <p>P4. Recognize actions (A12)</p> <p>P5. Recognize persons / faces (A1)</p> <p>P6. Recognize obstacles / uneven ground (A1,A2,A3,A4,A5,A7,A8,A10)</p> <p>P7. Recognize/ Locate items (A3,A4,A7,A9)</p> <p>P8. Retrieve / store information (A14,A15)</p> <p>P9. Recognize dialogue context (A6,A11)</p> <p>P10. Have knowledge of the map of the environment (A2)</p>	<ul style="list-style-type: none"> - ALPeoplePerception - no dedicated module, it could be achieved with external libraries - ALMood - no dedicated module, it could be achieved with external libraries - ALFaceDetection - ALLaser, ALSonar - ALVisionRecognition - ALMemory - ALSpeechRecognition - no dedicated module, it could be achieved with different solutions
<p>Left: Robot verbal capabilities involved Right: Corresponding Pepper API (if any)</p>	<p>V1. Ask Yes/ No questions (A2,A4,A6)</p> <p>V2. Ask multiple choice questions (A2,A6)</p> <p>V3. Suggest / remind (A3,A13,A14,A15)</p> <p>V4. Context dependent chat (A2,A5,A11,A14,A15)</p> <p>V5. Greet (A1)</p> <p>V6. Encourage/ praise (A13)</p> <p>V7. Report information (A5)</p>	<ul style="list-style-type: none"> - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech - ALDialog, ALTextToSpeech, ALTabletService - ALMemory, ALTextToSpeech,

		ALTabletService
Which “qualitative” robot behavior is expected to be culturally dependent	<ul style="list-style-type: none"> R6. Proper Way of greeting R7. Properly addressing the visitor R8. Distance from visitor and non-involvement in discussion R9. Helping in the kitchen, knowing where things are kept R10. Bring tray with tea cups etc to the living room 	
Which behavior is “quantitatively” different depending con culture (volume and tone of voice, distance, velocity, etc)	<ul style="list-style-type: none"> T1. Speaks in low volume T2. Speaks with soft voice T3. Move in low speed T4. Stands not too close to Mr S T5. Keeps acceptable distance from the visitor T6. Smile frequently 	

4.7 MR SMITH – PREPARING FOR DINNER, DINNER

Scenario name	MrSmith – Preparing for dinner, Dinner	
Time of the day	Dinner time	
General Description	<p><...> It is time for dinner now and Mr S decides to have something light. He will have a nice fresh ham salad¹; some lettuce, cucumber, tomato and slices of ham. He will also add a slice of bread with butter.</p> <p>He will watch his favourite TV programme, 'country file', feed Tiger and take his evening pills.</p>	<p><i>1. This is a normal Sunday evening dinner for people of her generation.</i></p>
Functional areas of the house involved	<p>F1. Living room</p> <p>F2. Kitchen</p>	
Relevant objects involved	<p>O1. Plates/glasses</p> <p>O2. Medication</p> <p>O3. TV & TV remote</p>	
Relevant persons (in addition to user and caregiver)	<p>B1. No-one</p>	
What a human (formal or informal) caregiver shall / can do in this scenario	<p>H1. Get all the ingredients for making the salad</p> <p>H2. Prepare salad</p> <p>H3. Use the appropriate plates/glasses /utensils</p> <p>H4. Bring the medication</p> <p>H5. Feed the cat</p> <p>H6. Switch on the TV/ find TV programme</p>	
Cultural knowledge involved (top level concepts in the Cultural Knowledge hierarchy)	<p>C1. Knowledge of tradition for late cooked lunch on Sunday (the most important family eating event of the week), followed by simple, usually cold dish for dinner such as salad or sandwiches.</p> <p>C2. Names of different TV channels and programmes</p> <p>C3. Knowledge of English cooking</p>	
Which “qualitative” caregiver behavior is expected to be culturally dependent	<p>D1. Help to prepare the light dinner</p> <p>D2. Responds to Mr S preferences (having bread and butter with her salad)</p> <p>D3. Help to carry the food in the living room where it is normal to have Sunday dinner while watching TV</p>	

Which behavior is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc.)	<p>D4. Feed his beloved cat</p> <p>E1. Polite and normal volume of voice</p> <p>E2. Moving about in normal speed and manner</p> <p>E3. Gestures , few and not too exaggerated</p>
<p>Left: What the robot shall / can do in this scenario</p> <p>Right: Alternative tasks</p>	<p>A1. Ask Mr S if he needs any help with preparing dinner (P2,P3,V2,V4) [E]</p> <p>A2. Praise Mr S on eating a healthy diet (M10,V4,V5) [E]</p> <p>A3. Locate object as needed (plates,glasses,pills) (M4,M7,P4,P5) [H]</p> <p>A4. Bring objects as needed (plates,glasses,pills) (M1,M2,M4,M6,M7,P1,P4) [H]</p> <p>A5. Bring a tray with food in the living room, following Mr S (M1,M3,M4,M7,P4,P5) [H]</p> <p>A6. Keep company to Mr S while eating (M10,P2,V1,V2,V4) [E]</p> <p>A7. Switch on/off TV when required (M8,M9) [H]</p> <p>A8. Remind Mr S to take his medication and to feed his cat (P2,P6,V3) [E]</p> <p>A9. Ask information about and comment on his dietary choices (M10,P6,V1,V2,V4) [E]</p> <p>A3'+A4'. Tell Mr S the positions of needed objects in the environment, knowing them a priori, or detecting them by using markers.</p> <p>A5'. Locate and indicate objects needed for preparing the tray, knowing their position in the environment, or using markers. Suggest Mr S to bring the tray with food to the table</p> <p>A5''. Permanently attach a tray to the robot's chest to bring objects</p> <p>A7'. Switch on/off TV by connecting to the smart environment.</p> <p>A7''. Connect to internet TV and let Mr S watch his favorite TV program via the Pepper's screen.</p>
<p>Left: Robot motor capabilities required</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>M1. Grasp objects (A4,A5)</p> <p>M2. Carry lightweight items (A4)</p> <p>M3. Carry heavyweight items (A5)</p> <p>M4. Navigate autonomously in the house (A3,A4)</p> <p>M5. Follow moving objects / persons (A5)</p> <p>M6. Reach a target /person (A4)</p> <p>M7. Avoid unexpected static or moving obstacles / persons (A3,A4,A5)</p> <p>M8. Turn on radio / TV /cassette player (A7)</p> <p>- no dedicated module, it could be achieved with external libraries</p> <p>- feasible if payload is <300 g</p> <p>- not feasible</p> <p>- ALNavigation</p> <p>- ALVisionRecognition, ALCloseObjectDetection, ALNavigation</p> <p>- ALVisionRecognition, ALCloseObjectDetection, ALNavigation</p> <p>- ALMotion</p> <p>- ALAudioPlayer</p> <p>For external devices, It could be</p>

	<p>M9. Operate appliance (by communicating with smart environment) (A7)</p> <p>M10. Show feelings (A2,A6,A9)</p>	<p>achieved with a specific communication protocol</p> <ul style="list-style-type: none"> - It could be achieved with a specific communication protocol - ALLeds, ALRobotPosture, ALAnimationPlayer
<p>Left: Robot perceptual capabilities required</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>P1. Locate persons (distance and position) (A4,A5)</p> <p>P2. Recognize actions (A1,A6,A8)</p> <p>P3. Recognize persons / faces (A1)</p> <p>P4. Recognize obstacles / uneven ground (A3,A4,A5)</p> <p>P5. Recognize/ Locate items (A3)</p> <p>P6. Retrieve / store information (A8,A9)</p>	<ul style="list-style-type: none"> - ALPeoplePerception - no dedicated module, it could be achieved with external libraries - ALFaceDetection - ALLaser, ALSonar - ALVisionRecognition - ALMemory
<p>Left: Robot verbal capabilities involved</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>V1. Ask Yes/ No questions (A6,A9)</p> <p>V2. Ask multiple choice questions (A1,A6,A9)</p> <p>V3. Suggest / remind (A8)</p> <p>V4. Context dependent chat (A1,A2,A6,A9)</p> <p>V5. Encourage/ praise (A2)</p>	<ul style="list-style-type: none"> - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech, ALTabletService
<p>Which “qualitative” robot behavior is expected to be culturally dependent</p>	<p>R1. Stay with him in the living room where he is having Sunday dinner</p> <p>R2. Do not disturb during dinner as he is watching the TV</p>	
<p>Which behavior is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc)</p>	<p>T1. Speaks with soft tone</p> <p>T2. Speaks in normal volume</p> <p>T3. Walks in low speed</p> <p>T4. Stands not too close to Mr S</p> <p>T5. Not too many gestures</p>	

4.8 MR SMITH - AFTER DINNER ROUTINE, READING/AUDIO/TV/MUSIC

Scenario name	Mr Smith - After dinner routine, Reading/audio/TV/music	
Time of the day	After dinner	
General Description	<p><...> Recently, Mr S developed cataract in both eyes which have affected his vision although the doctor told him they are not ready to be operated on. His visual impairment has resulted in losing his confidence leaving his home and he tends to stay indoors more and more.</p> <p>Mr Smith always liked reading, something which he cannot easily do now and as a result he has to borrow audio books from the local library¹. He finds this fact frustrating and slightly depressing.</p> <p>After his friend's departure MrS turns the radio on and listens to some classical music².</p> <p>After dinner, despite his eyesight problems, he will watch his favourite TV programme, 'country file',³ feed Tiger and take his evening pills.</p>	<p>1. Local public libraries in the UK, providing access to audio books and books in large print.</p> <p>2. English people of her generation and education prefer classical music</p> <p>3. English TV programs related to nature, gardening, flowers, English country side and life.</p>
Functional areas of the house involved	<p>F1. Living room</p> <p>F2. Bedroom</p>	
Relevant objects involved	<p>O1. TV</p> <p>O2. Radio</p> <p>O4. Remote control</p> <p>O6. Audio book</p> <p>O8. Armchair</p>	
Relevant persons (in addition to user and caregiver)	<p>B1. No-body</p>	
What a human (formal or informal) caregiver shall / can do in this scenario	<p>H1. Help him switch on the radio or TV and find the channel of his choice</p> <p>H2. Start the audio book from where he left off</p> <p>H3. Increase/decrease the volume as needed in different devices (TV, audio book, radio)</p> <p>H4. Read to him</p> <p>H5. Keep company</p> <p>H6. Encourage him to read at least a few pages using a magnifying glass or reading light</p> <p>H7. Receive e-mail alerts from the library when new audio books come in</p>	

	H8. Find and suggest online reading resources according to his interests and favourite author	
Cultural knowledge involved (top level concepts in the Cultural Knowledge hierarchy)	C1. Knowledge that reading science/ ethics/ philosophy type of books, listening to classical music and watching TV programmes about the English countryside is part of Mr S cultural identity C2. Knowing his favourite channels and TV programs and reminding him when they are on C3. Knowing his favourite classical music composers C4. Knowing his favourite authors C5. Knowledge about the system of public libraries and resources	
Which “qualitative” caregiver behaviour is expected to be culturally dependent	D1. Asking politely if he will need help with any of the activities (starting the TV or the radio, finding the channel) D2. Ask whether Mr S would like some company or he would prefer to be alone D3. Polite encouragement to read and/or listen to his audio book	
Which behaviour is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc.)	E1. Polite and normal tone of voice E2. Move with normal speed in the house	
Left: What the robot shall / can do in this scenario Right: Alternative tasks	A1. Remind Mr S that his favourite TV show is on (P4,P7,V3) [E] A2. Switch on/off TV/radio and choose appropriate channel /volume (M6,M7,P7) [H] A3. Provide privacy (M3,M5,P5) [E] A4. Ask Mr S if he would like it to read an audiobook or listen some music (V2,V4,V5) [E] A5. Find online resources for audiobooks (P7,P8,V3) [E] A6. Locate things as needed (book, glasses, remote) (M3,M5,P5,P6) [H] 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 Mr S to listen to his audio-book or to read few pages of a book (M8,P2,P3,V5) [E] A10. Remind Mr S that he has received e-mails from the library about their new book arrivals (P7,V6) [E] A11. Keep company (M8,P2,V1,V2,V4) [E]	A2'. Connect to internet Tv/radio and let Mr S listen to his favorite radio program via the Pepper's loudspeakers/tablet. A6'+A7'. Tell Mr S the positions of needed objects in the environment, knowing them a priori, or detecting them by using markers. A7''. Permanently attach a tray to the robot's chest to bring objects
Left: Robot motor	M1. Grasp objects (A7)	- no dedicated module, it could be

<p>capabilities required Right: Corresponding Pepper API (if any)</p>	<p>M2. Carry lightweight items (A7) M3. Navigate autonomously in the house (A3,A6,A7) M4. Reach a target / person (A7) M5. Avoid unexpected static or moving obstacles / persons (A3,A6,A7) M6. Turn on radio / TV /cassette player (A2) M7. Operate appliance (by communicating with smart environment) (A2) M8. Show feelings (A8,A9,A11)</p>	<p>achieved with external libraries - feasible if payload is <300 g - ALNavigation - ALVisionRecognition, ALCloseObjectDetection, ALNavigation - ALMotion - ALAudioPlayer For external devices, It could be achieved with a specific communication protocol - It could be achieved with a specific communication protocol - ALLeds, ALRobotPosture, ALAnimationPlayer</p>
<p>Left: Robot perceptual capabilities required Right: Corresponding Pepper API (if any)</p>	<p>P1. Locate persons (distance and position) (A7) P2. Recognize emotions (A9,A11) P3. Recognize actions (A9) P4. Recognize persons / faces (A1) P5. Recognize obstacles / uneven ground (A3,A6,A7) P6. Recognize/ Locate items (A6) P7. Retrieve / store information (A1,A2,A5,A10) Use search engines for finding information (A5)</p>	<p>- ALPeoplePerception - ALMood - no dedicated module, it could be achieved with external libraries - ALFaceDetection - ALLaser, ALSonar - ALVisionRecognition - ALMemory - ALTabletService</p>
<p>Left: Robot verbal capabilities involved Right: Corresponding Pepper API (if any)</p>	<p>V1. Ask Yes/ No questions (A11) V2. Ask multiple choice questions (A4,A11) V3. Suggest / remind (A1,A5) V4. Context dependent chat (A4,A11) V5. Encourage/ praise (A4,A9) V6. Report information (A10)</p>	<p>- ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech, ALTabletService - ALMemory, ALTextToSpeech,</p>

	V7. Read audiobook (A8)	ALTabletService - AIAudioPlayer
Which "qualitative" robot behaviour is expected to be culturally dependent	R1. Asking politely R2. Reminding politely R3. Offering items gently (gentle gestures) R4. Provide privacy	
Which behaviour is "quantitatively" different depending on culture (volume and tone of voice, distance, velocity, etc)	T1. Speaks with normal tone T2. Speaks in normal volume T3. Walks in normal speed	

5. 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.

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 breakfast¹ she has green tea, baked salmon, miso soup, rice, boiled vegetables, and fruits. She does not like Natto² 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

1. *Common food for breakfast (rice, miso soup, green tea, baked fish, boiled vegetables, fruits, yogurt)*
2. *Fermented beans*
3. *Routine in Japanese care house*

breakfast, she has her vital signs checked³ 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.

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)*



7. *The carer in that has been interviewed 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



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.

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.

Before eating lunch they say "Itadakimasu" with their hands close together to express of gratitude of the meal then lunch starts. They also do the same after 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.

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.*

10. *Japanese traditional ballad called as Enka*

11. *Japanese Channel for education and news*

12. *Japanese wet towel*



13. *Typical lunch in Japan.*



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 therapist. Afterwards she trains to raise herself up from the chair with the therapist.

After her nice exercise, it is time for some green tea. She washes her hand with soap and dries her hands with a towel. She likes to have her tea with some soft azuki-bean jelly¹⁴ brought by her son in his last visit. Soft azuki-bean jelly needs to be cut because it is one block. 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 books¹⁵ 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 “Mother¹⁷, how are you?” She smiles and replies “I’m fine, thank you everybody for coming all the way¹⁷”. They take off their shoes at the entrance¹⁸, 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

14. Azuki-bean jelly with a pick and Japanese tea



15. Sutra book



16. Japanese call family member by a role from the perspective of the youngest generation (in this case, his grandchildren), not name

17. Greetings

18. Entering the house

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 Hinamatsuri¹⁹ 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 spring²⁰.

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 Ehomaki²¹ that means roll of blessed direction. It is dangerous for the elderly 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)²² 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”²³.

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.

19. Japanese festival for girls on 3rd March. At least one of his children should be a girl in this scenario.

20. Setsubun is 3rd Feb and means to divide seasons (winter <-> spring).

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



22. Masks and beans for Mamemaki



23. Oni= devil, soto=out, Fuku=blessed, uchi=inside

5.1 MRS YAMADA – MORNING ROUTINE, BREAKFAST

Scenario name	Mrs Yamada – Morning routine, Breakfast	
Time of the day	Morning	
General Description	<p><...> Mrs Y has green tea, baked salmon, miso soup, rice, boiled vegetables, and fruits from 7:30 for breakfast¹. She doesn't like Natto² so she doesn't take it always.</p> <p>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.</p> <p>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.</p> <p>After eating the breakfast, she has her vital check³ in lounge. The nurse and the carer check her breathing, blood pressure, body temperature, heart rate, and so on.</p>	<p>1. <i>Common foods for breakfast (rice, miso soup, green tea, baked fish, boiled vegetables, fruits, yogurt)</i></p> <p>2. <i>Fermented beans</i></p> <p>3. <i>Routine in Japanese care house</i></p>
Functional areas of the house involved	<p>F1. Dining room</p> <p>F2. Lounge</p>	
Relevant objects involved	<p>O1. Plates/glasses</p> <p>O2. Pot for tea</p> <p>O3. Cutlery</p> <p>O4. Table</p> <p>O5. Chair</p>	
Relevant persons (in addition to user and caregiver)	<p>B1. Other elderly</p> <p>B2. Carer</p>	
What a human (formal or informal) caregiver shall / can do in this scenario	<p>H1. Say Good morning</p> <p>H2. Remind her of the time for breakfast</p> <p>H3. Tell the today's breakfast menu</p> <p>H4. Serve breakfast</p> <p>H5. Ask whether she would like to have more tea</p> <p>H6. Bring a teapot</p>	

	H7. Remind her about her medication H8. Remind her about the vital check	
Cultural knowledge involved (top level concepts in the Cultural Knowledge hierarchy)	C1. Japanese breakfast dishes	
Which “qualitative” caregiver behavior is expected to be culturally dependent	D1. Japanese breakfast and what it could entail D2. Awareness of Mrs Y’s preferences (not having Natto etc) D3. Polite and respectful way of addressing Mrs Y. ‘Please’ and ‘Thank you’ prefix most dialogue.	
Which behavior is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc.)	E1. Gentle volume of voice E2. Moving about at slow speed	
Left: What the robot shall / can do in this scenario Right: Alternative tasks	A1. Greet Mrs Y, saying “Good morning” and asking her how she is feeling today (M5,M6,M7,P1,P2,P3,P4,V2,V4,V5) [E] A2. Remind Mrs Y the time of breakfast (P6,V6,V7) [E] A3. Tell Mrs Y the today’s breakfast menu, and praise on eating a healthy and balanced diet (M7,P6,V6,V7) [E] A4. Move to the dining room with Mrs Y (M4,M6,P2,P4) [H] A5. Greet all other elderly (M7,P3,V5) [E] A6. Ask Mrs Y if she needs help in preparing her tray (P2,V1) [E] A7. Locate objects as needed (plates, glasses, pots) (M3,M6,P4,P5) [H] A8. Bring objects as needed (plates, glasses, pots) (M1,M2,M3,M5,M6,P4,P5) [H] A9. Prepare a tray with food (M1,M3,P5,P6) [H] A10. Keep company to Mrs Y while eating (P2,V1,V2,V4) [E] A11. Ask Mrs Y if she enjoyed her breakfast and comment on her dietary choices (M7,P2,V1,V4) [H] A12. Remind Mrs Y about medication and vital check (P6,V3,V6) [E] A13. Move with Mrs Y to the lounge for vital check (M4,M6,P4) [H]	A4’. Lead Mrs Y to the dining room by walking ahead of her. (Assuming that the whole path is traversable for the robot). A7’+A8’. Tell Mrs Y the positions of needed objects in the environment, knowing them a priori, or detecting them by using markers. A9’. Locate and indicate objects needed for preparing the tray, knowing their position in the environment, or using markers A8’’+A9. Permanently attach a tray to the robot’s chest to bring objects A11’. Provide general comments about breakfast A13’. Suggest Mrs Y to go to the lounge for vital check. A13’’. Lead Mrs Y to the lounge by

		walking ahead of her. (Assuming that the whole path is traversable for the robot).
Left: Robot motor capabilities required Right: Corresponding Pepper API (if any)	<p>M1. Grasp objects (A8,A9)</p> <p>M2. Carry lightweight items (A8,A9)</p> <p>M3. Navigate autonomously in the house (A7,A8)</p> <p>M4. Follow moving objects / persons (A4,A13)</p> <p>M5. Reach a target / person (A1,A8)</p> <p>M6. Avoid unexpected static or moving obstacles / persons (A1,A4,A7,A8,A13)</p> <p>M7. Show feelings (A1,A3,A5,A11)</p>	<ul style="list-style-type: none"> - no dedicated module, it could be achieved with external libraries - feasible if payload is <300 g - ALNavigation - ALVisionRecognition, ALCloseObjectDetection, ALNavigation - ALVisionRecognition, ALCloseObjectDetection, ALNavigation - ALMotion - ALLeds, ALRobotPosture, ALAnimationPlayer
Left: Robot perceptual capabilities required Right: Corresponding Pepper API (if any)	<p>P1. Locate persons (distance and position) (A1)</p> <p>P2. Recognize actions (A1,A4,A6,A10,A11)</p> <p>P3. Recognize persons / faces (A1,A5)</p> <p>P4. Recognize obstacles / uneven ground (A1,A4,A7,A8,A13)</p> <p>P5. Recognize/ Locate items (A7,A8,A9)</p> <p>P6. Retrieve / store information (A2,A3,A9,A12)</p>	<ul style="list-style-type: none"> - ALPeoplePerception - no dedicated module, it could be achieved with external libraries - ALFaceDetection - ALLaser, ALSonar - ALVisionRecognition - ALMemory
Left: Robot verbal capabilities involved Right: Corresponding Pepper API (if any)	<p>V1. Ask Yes/ No questions (A6,A10,A11)</p> <p>V2. Ask multiple choice questions (A1,A10)</p> <p>V3. Suggest / remind (A12)</p> <p>V4. Context dependent chat (A1,A10,A11)</p> <p>V5. Greet (A1,A5)</p> <p>V6. Encourage/ praise (A2,A3,A12)</p>	<ul style="list-style-type: none"> - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech - ALDialog, ALTextToSpeech,

	V7. Report information (A2,A3)	ALTabletService - ALMemory, ALTextToSpeech, ALTabletService
Which “qualitative” robot behavior is expected to be culturally dependent	R1. Showing awareness of Mrs Y’s preferences R2. Showing awareness of Japanese breakfast and what it could entail	
Which behavior is “quantitatively” different depending con culture (volume and tone of voice, distance, velocity, etc)	T1. Speaks with soft tone T2. Speaks in low volume T3. Walks in low speed	

5.2 MRS YAMADA – MORNING ROUTINE, DRESSING

Scenario name	Mrs Yamada – Morning routine, Dressing	
Time of the day	Morning	
General Description	<p><....> 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.</p> <p>After moving to a care house, she puts easy-to-wear² but sometimes adds such scarfs to enjoy dressing.</p> <p>She wears a blouse and a long skirt then chooses one scarf made of Kimono cloth.</p> <p>She combs her hair nicely.</p>	<p>1. Japanese traditional dresses</p> <p>2. 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. In many cases have only one wardrobe in a curtained area in one room that other elderly also stay.</p>
Functional areas of the house involved	<p>F1. Bedroom - Bed</p> <p>F2. Bedroom – Wardrobe</p>	
Relevant objects involved	<p>O1. blouse, skirt</p> <p>O2. Scarf</p> <p>O3. Comb</p>	
Relevant persons (in addition to user and caregiver)	<p>B1. No-one</p>	
What a human (formal or informal) caregiver shall / can do in this scenario	<p>H1. Help Mrs Y to wear her blouse, if she needs help</p> <p>H2. Help Mrs Y to choose scarf</p> <p>H3. Bring comb</p>	
Cultural knowledge involved (top level concepts in the Cultural Knowledge hierarchy)	<p>C1. Japanese way to rework dressing</p>	
Which “qualitative” caregiver behaviour is expected to be culturally dependent	<p>D1. The way of praising depends on culture and current emotion</p> <p>D2. Remember her favourite scarf</p> <p>D3. Not rushing Mrs Y</p>	

Which behaviour is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc.)	<p>E1. Polite and soft tone of voice</p> <p>E2. Gentle reminder about the hairdresser</p> <p>E3. Distance kept by caregiver from Mrs Y is a parameter that depends on culture</p>	
Left: What the robot shall / can do in this scenario Right: Alternative tasks	<p>A1. Locate objects if needed (clothes, scarf, comb) (M4,M7,P5,P6) [H]</p> <p>A2. Bring objects if needed (clothes, scarf, comb) (M2,M3,M4,M5,M7,P1,P5) [H]</p> <p>A3. Recommend wearing a scarf (P7,V2,V3,V4) [E]</p> <p>A4. Open wardrobe with clothes (M1,M2,M5,M6,M7,M8,P5,P6) [H]</p> <p>A5. Ask Mrs Y if she needs help while getting dressed (P4,V1) [E]</p> <p>A6. Help Mrs Y to wear clothes by holding them (M1,M2,M3,M5,M7,P1,P2,P4,P5,P6) [H]</p> <p>A7. Provide privacy to Mrs Y (M4,P4,P5) [E]</p> <p>A8. Encourage Mrs Y to comb her hair (M9,P3,P7,V2,V4) [E]</p> <p>A9. Praise Mrs Y for her look (M9,P3,V3,V4) [E]</p>	<p>A1'+A2'. Tell Mrs Y the positions of needed objects in the environment, knowing them a priori, or detecting them by using markers.</p> <p>A2''. Permanently attach a tray to the robot's chest to bring objects</p> <p>A4'. Open the wardrobe, by controlling its automatic sliding doors within the smart home</p> <p>A6'. Bring a hanger (on wheels) close to Mrs Y, and then bring it back to its place again.</p>
Left: Robot motor capabilities required Right: Corresponding Pepper API (if any)	<p>M1. Coordinately move base/ arms/ hands (A4,A6)</p> <p>M2. Grasp objects (A2,A4,A6)</p> <p>M3. Carry lightweight items (A2,A6)</p> <p>M4. Navigate autonomously in the house (A1,A2,A7)</p> <p>M5. Reach a target / person (A2,A4,A6)</p> <p>M6. Pull objects (A4)</p> <p>M7. Avoid unexpected static or moving obstacles / persons (A1,A2,A4,A6)</p> <p>M8. Open doors / windows (by communicating with smart environment) (A4)</p> <p>M9. Show feelings (A8,A9)</p>	<p>- ALMotion</p> <p>- no dedicated module, it could be achieved with external libraries</p> <p>- feasible if payload is <300 g</p> <p>- not feasible</p> <p>- ALNavigation</p> <p>- no dedicated module, it could be achieved with external libraries</p> <p>- ALMotion</p> <p>- It could be achieved with a specific communication protocol</p> <p>- ALLeds, ALRobotPosture, ALAnimationPlayer</p>
Left: Robot perceptual capabilities required Right: Corresponding	<p>P1. Locate persons (distance and position) (A2,A6)</p> <p>P2. Recognize posture, gesture, movements (A6)</p>	<p>- ALPeoplePerception</p> <p>- no dedicated module, it could be achieved with external libraries</p>

Pepper API (if any)	<p>P3. Recognize emotions (A8,A9)</p> <p>P4. Recognize actions (A5,A6,A7)</p> <p>P5. Recognize obstacles / uneven ground (A1,A2,A4,A6,A7)</p> <p>P6. Recognize/ Locate items (A1,A4,A6)</p> <p>P7. Retrieve / store information (A3,A8)</p>	<ul style="list-style-type: none"> - ALMood - no dedicated module, it could be achieved with external libraries - ALLaser, ALSonar - ALVisionRecognition - ALMemory
<p>Left: Robot verbal capabilities involved</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>V1. Ask Yes/ No questions (A5)</p> <p>V2. Suggest / remind (A3,A8)</p> <p>V3. Context dependent chat (A3,A9)</p> <p>V4. Encourage/ praise (A3,A8,A9)</p>	<ul style="list-style-type: none"> - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech, ALTabletService
Which “qualitative” robot behavior is expected to be culturally dependent	<p>R1. Use the right words for praising</p> <p>R2. Not rushing Mrs Y</p>	
Which behavior is “quantitatively” different depending con culture (volume and tone of voice, distance, velocity, etc)	<p>T1. Speaks with soft tone</p> <p>T2. Speaks in low volume</p> <p>T3. Keeps right distance from Mrs Y</p> <p>T4. Frequency of reminders is not too high</p>	

5.3 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	<p><...> it is now mid-morning, and Mrs Y 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.</p> <p>She turns the radio on then listens to her favourite program. She listens to some news and enjoys some music. The program is for elderly people so music is not recent pops but Japanese ballads¹.</p> <p>After listening to the radio, she decides to go down the first floor to watch TV. She liked to watch NHK². 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.</p>	<p>1. Japanese traditional ballad called as Enka</p> <p>2. Japanese Channel for education and news</p>
Functional areas of the house involved	<p>F1. kitchen</p> <p>F2. living room</p> <p>F3. Lounge with TV</p>	
Relevant objects involved	<p>O1. TV</p> <p>O2. Radio</p> <p>O3. Phone</p> <p>O6. Armchair</p> <p>O7. Tea bags</p> <p>O8. Tea cup</p> <p>O9. Tea pot</p>	
Relevant persons	<p>B1. No-one</p>	
What a human (formal or informal) caregiver shall / can do in this scenario	<p>H1. Help her switch on the radio or TV and find the correct channel (channel of her choice)</p> <p>H2. Bring her phone</p> <p>H3. Reminder her to call or call family member</p> <p>H4. Carry her tea cup in the living room</p>	
Cultural knowledge	<p>C1. Appreciate the importance of Japanese music and Japanese TV programmes.</p>	

involved (top level concepts in the Cultural Knowledge hierarchy)	C2. Understand the importance of keeping in regular contact with her family.	
Which “qualitative” caregiver behavior is expected to be culturally dependent	<p>D1. Asking politely if she will need help with any of the activities (starting the TV or the radio, finding the channel)</p> <p>D2. Reminding her politely to call her son</p> <p>D3. Bring items and offering them gently</p> <p>D4. Privacy when talking with family</p>	
Which behavior is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc.)	<p>E1. Polite and soft tone of voice</p> <p>E2. Move slowly and gently in the house</p>	
Left: What the robot shall / can do in this scenario Right: Alternative tasks	<p>A1. Ask Mrs Y how she feels and if she wants a cup of tea (P1,P2,P4,P7,V1,V2) [E]</p> <p>A2. Remind Mrs Y that her favourite radio show is on (P7,P8,V3,V7) [E]</p> <p>A3. Switch on/off radio and put the correct channel/volume (M6,M7) [H]</p> <p>A4. Locate objects as needed (phone, tea cup) (M3,M5,P5,P6) [H]</p> <p>A5. Bring objects as needed (phone, tea cup) (M1,M2,M3,M4,M5,P1,P5) [H]</p> <p>A6. Encourage Mrs Y to watch TV with the other elderly (P3,P7,V3,V4,V5) [E]</p> <p>A7. When Mrs Y is back, remind her to call her family (M8,P3,P7,V3) [E]</p> <p>A8. Ask Mrs Y if she wants to use skype/facetime or phone (V2,V3) [E]</p> <p>A9. Place a skype/phone call, saying “please hold on” and then asking Mrs Y to talk (M7,P7,V4,V5,V6) [E]</p> <p>A10. Provide privacy to Mrs Y while talking with family (M3,M5,P3,P5) [E]</p>	<p>A3'. Connect to internet radio and let Mrs C listen to her favorite radio program via the Pepper’s loudspeakers.</p> <p>A3''. Connect to internet radio TV and let Mrs C watch her favorite TV program via the Pepper’s screen.</p> <p>A4'+A5'. Tell Mrs Y the positions of needed objects in the environment, knowing them a priori, or detecting them by using markers.</p> <p>A5''. Permanently attach a tray to the robot’s chest to bring objects</p>
Left: Robot motor capabilities required	M1. Grasp objects (A5)	- no dedicated module, it could be achieved with external libraries

<p>Right: Corresponding Pepper API (if any)</p>	<p>M2. Carry lightweight items (A5) M3. Navigate autonomously in the house (A4,A5,A10) M4. Reach a target / person (A5) M5. Avoid unexpected static or moving obstacles / persons (A4,A5,A10) M6. Turn on radio / TV /cassette player (A3) M7. Operate appliance (by communicating with smart environment) (A3,A9) M8. Show feelings (A7)</p>	<ul style="list-style-type: none"> - feasible if payload is <300 g - ALNavigation - ALVisionRecognition, ALCloseObjectDetection, ALNavigation - ALMotion - ALAudioPlayer For external devices, It could be achieved with a specific communication protocol - It could be achieved with a specific communication protocol - ALLeds, ALRobotPosture, ALAnimationPlayer
<p>Left: Robot perceptual capabilities required Right: Corresponding Pepper API (if any)</p>	<p>P1. Locate persons (distance and position) (A1,A5) P2. Recognize emotions (A1) P3. Recognize actions (A6,A7,A10) P4. Recognize persons / faces (A1) P5. Recognize obstacles / uneven ground (A4,A5,A10) P6. Recognize/ Locate items (A4) P7. Retrieve / store information (A1,A2,A6,A7,A9) P8. Keep track of time (A2)</p>	<ul style="list-style-type: none"> - ALPeoplePerception - ALMood - no dedicated module, it could be achieved with external libraries - ALFaceDetection - ALLaser, ALSonar - ALVisionRecognition - ALMemory - no dedicated module, it could be achieved with different solutions
<p>Left: Robot verbal capabilities involved Right: Corresponding Pepper API (if any)</p>	<p>V1. Ask Yes/ No questions (A1) V2. Ask multiple choice questions (A1,A8) V3. Suggest / remind (A2,A6,A7,A8) V4. Context dependent chat (A6,A9) V5. Encourage/ praise (A6,A9) V6. Place a phone call (A9)</p>	<ul style="list-style-type: none"> - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech, ALTabletService - ALDialog, ALTabletService, or It

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

5.4 MRS YAMADA - PRE LUNCH ROUTINE, PRAY



Scenario name	Mrs Yamada - Pre Lunch routine, Pray	
Time of the day	Pre-lunch time	
General Description	<p><...> 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.</p> <p>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.</p> <p>She thought of her sister in heaven and talked her about recent life then asked her to watch out for her safety.</p>	<p>1. Example of the portrait with a vase, an incense stick, a candle, a small cup, and a bell.</p> 
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 / can do	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.	

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

	<p>close friends – birthday / wedding anniversaries / death anniversaries (P8,V3,V5,V6) [E]</p> <p>A8. Assist Mrs Y to sit on the chair (M5,M8,P1,P2) [H]</p> <p>A9. Ask Mrs Y if she is comfortable (P2,V1) [E]</p> <p>A10. Remind Mrs Y to check that there are no flames (P7,V3) [E]</p> <p>A11. Ask Mrs Y questions about her sister (M10,P3,V1,V2,V4) [E]</p>	
<p>Left: Robot motor capabilities required</p> <p>Right: Corresponding API or H for “hard”</p>	<p>M1. Coordinately move base/ arms/ hands (A3,A4)</p> <p>M2. Grasp objects (A2,A3,A4)</p> <p>M3. Carry lightweight items (A2,A4)</p> <p>M4. Carry heavyweight items (A3)</p> <p>M5. Support for equilibrium/standing/sitting (A8)</p> <p>M6. Navigate autonomously in the house (A1,A2,A4,A6)</p> <p>M7. Track moving objects / persons (A6)</p> <p>M8. Reach a target / person (A2,A4,A8)</p> <p>M9. Avoid unexpected static or moving obstacles / persons (A1,A2,A4)</p> <p>M10. Show feelings (A5,A11)</p>	<ul style="list-style-type: none"> - ALMotion - no dedicated module, it could be achieved with external libraries - feasible if payload is <300 g - not feasible - not feasible - ALNavigation - ALLandmarkDetection, ALColorBlobDetection, ALVisionRecognition, ALCloseObjectDetection - ALVisionRecognition, ALCloseObjectDetection, ALNavigation - ALMotion - ALLeds, ALRobotPosture, ALAnimationPlayer
<p>Left: Robot perceptual capabilities required</p> <p>Right: corresponding API or H for “hard”</p>	<p>P1. Locate persons (distance and position) (A2, A3,A8)</p> <p>P2. Recognize posture, gesture, movements (A3,A8,A9)</p> <p>P3. Recognize emotions (A11)</p> <p>P4. Recognize actions (A5,A6)</p> <p>P5. Recognize obstacles / uneven ground (A1,A2,A4)</p> <p>P6. Recognize/ Locate items (A1,A3,A4)</p> <p>P7. Recognize fire / flame (A10)</p>	<ul style="list-style-type: none"> - ALPeoplePerception - no dedicated module, it could be achieved with external libraries - ALMood - no dedicated module, it could be achieved with external libraries - ALLaser, ALSonar - ALVisionRecognition - not feasible, it could be achieved by communicating with the smart

	P8. Retrieve / store information (A5,A7)	environment using a specific protocol - ALMemory
Left: Robot verbal capabilities involved Right: corresponding API or H for "hard"	V1. Ask Yes / No questions (A9,A11) V2. Ask multiple choice questions (A5,A11) V3. Suggest / remind (A7,A10) V4. Context dependent chat (A5,A11) V5. Encourage/ praise (A7) V6. Report information (A7)	- ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech, ALTabletService - ALMemory, ALTextToSpeech, ALTabletService
Which "qualitative" robot behavior is expected to be culturally dependent	R1. Suggesting when it is the time of the day for praying R2. Waiting for the person to finish praying R3. Helping person's position during praying	
Which behavior is "quantitatively" different depending on culture (volume and tone of voice, distance, velocity, etc)	T1. Speaks with soft tone T2. Speaks in low volume T3. Walks in low speed T4. Stands not too close to Mrs Y	

5.5 MRS YAMADA - LUNCH ROUTINE, EATING


Scenario name	Mrs Yamada - Lunch routine, Eating	
Time of the day	Lunch time	
General Description	<p><....> 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 towels¹ 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.</p> <p>Today's lunch² 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.</p> <p>After lunch is ready and everyone is seated, they say "Itadakimasu" 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".</p> <p>She enjoyed lunch with others.</p> <p>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.</p>	<p>1. Japanese wet towel</p>  <p>2. Typical lunch in Japan.</p> 
Functional areas of the house involved	<p>F1. Dining room</p> <p>F2. Kitchen</p> <p>F3. Dining table</p> <p>F4. Own room</p>	
Relevant objects involved	<p>O1. Wet towel</p> <p>O2. Tray</p> <p>O3. Cups</p> <p>O4. Medicine</p> <p>O5. Curtain</p>	
Relevant persons (in addition to user and caregiver)	<p>B1. Carer</p> <p>B2. Other elderly people</p>	

What a human (formal or informal) caregiver shall / can do in this scenario	H1. Assist to go to the dining room H2. Assist to prepare wet towels 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 involved (top level concepts in the Cultural Knowledge hierarchy)	C1. Japanese way to start and finish lunch C2. Japanese tool of wet towel to eat lunch C3. Way of eating (together with others) C5. Way of serving (all on the tray) C6. Fixed menu is served	
Which “qualitative” caregiver behavior is expected to be culturally dependent	D1. Time of eating D2. Type of food D3. Type of tea preparation. 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 forgets to do	
Which behavior is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc.)	E1. Polite and soft tone of voice E2. Unrushed walking and eating	
Left: What the robot shall / can do in this scenario Right: Alternative tasks	A1. Remind Mrs Y that it is lunch time (P4,P7,P8,V3) [E] A2. Walk with Mrs Y to the dining room and back to the room (M7,M9,P1,P5) [E] A3. Greet other elderly (M6,M9,M10,P1,P4,P5,V5) [E] A4. Locate objects as needed (towel, tray, cups, medicine) (M6,M9,P5,P6) [H] A5. Bring objects as needed (towel, tray, cups, medicine) (M2,M3,M6,M8,M9,P1,P5) H A6. Prepare a tray with food for Mrs Y (M2,M3,P6,P7) [H] A7. Bring the tray to the table (M2,M4,M6,M8,M9,P1,P4,P5) [H]	A4'+A5'. Tell Mrs Y the positions of needed objects in the environment, knowing them a priori, or detecting them by using markers. A6'. Help Mrs Y to prepare a tray with food by suggesting the items to be taken and where they should be placed in the tray. A7'. Suggest Mrs Y to bring the tray with food to the table

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

<p>Left: Robot verbal capabilities involved Right: Corresponding Pepper API (if any)</p>	<p>V1. Ask Yes/ No questions (A10,A11) V2. Ask multiple choice questions (A10,A11) V3. Suggest / remind (A1,A13) V4. Context dependent chat (A8,A9,A10) V5. Greet (A3) V6. Encourage/ praise (A8)</p>	<p>- ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - Aldialog, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech - ALDialog, ALTextToSpeech, ALTabletService</p>
<p>Which “qualitative” robot behavior is expected to be culturally dependent</p>	<p>R1. Showing awareness of lunch routines (before, during and after lunch) R2. Paying attention whether anyone need more tea R3. Check if Mrs Y takes appropriate medicine or tell her if she forgets to do</p>	
<p>Which behavior is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc)</p>	<p>T1. Speaks with soft tone T2. Speaks in low volume T3. Patiently waits during eating and lunch routines</p>	

5.6 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	<p><...> 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.</p> <p>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 books¹ and they chant a Buddhist sutra together.</p> <p>After finished chanting, they close their eyes and with their hands closed together they bow their head.</p>	<p>1. Sutra book</p> 
Functional areas of the house involved	<p>F1. Bedroom</p> <p>F2. Lounge</p>	
Relevant objects involved	<p>O1. Bed</p> <p>O2. Newspaper</p> <p>O3. Sutra book</p>	
Relevant persons (in addition to user and caregiver)	<p>B1. Carer</p> <p>B2. Monk</p>	
What a human (formal or informal) caregiver shall / can do in this scenario	<p>H1. Don't disturb her nap, but keep track of time</p> <p>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</p> <p>H3. Choose appropriate news in the newspaper</p> <p>H4. Read the news to all</p>	

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

	<p>A12. Provide privacy (M4,P4) [E]</p> <p>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]</p>	
<p>Left: Robot motor capabilities required</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>M1. Coordinately move base/ arms/ hands (A11)</p> <p>M2. Grasp objects (A9,A11)</p> <p>M3. Carry lightweight items (A9,A11)</p> <p>M4. Navigate autonomously in the house (A1,A8,A9,A10,A11,A12)</p> <p>M5. Reach a target / person (A1,A9,A10,A11)</p> <p>M6. Avoid unexpected static or moving obstacles / persons (A1,A8,A9,A10,A11)</p> <p>M7. Show feelings (A7,A13)</p>	<p>- ALMotion</p> <p>- no dedicated module, it could be achieved with external libraries</p> <p>- feasible if payload is <300 g</p> <p>- ALNavigation</p> <p>- ALVisionRecognition, ALCloseObjectDetection, ALNavigation</p> <p>- ALMotion</p> <p>- ALLeds, ALRobotPosture, ALAnimationPlayer</p>
<p>Left: Robot perceptual capabilities required</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>P1. Locate persons (distance and position) (A1,A9,A10,A11)</p> <p>P2. Recognize posture, gesture, movements (A4)</p> <p>P3. Recognize emotions (A2,A4,A13)</p> <p>P4. Recognize actions (A3,A12)</p> <p>P5. Recognize persons / faces (A1,A10)</p> <p>P6. Recognize obstacles / uneven ground (A1,A8,A9,A10,A11)</p> <p>P7. Recognize/ Locate items (A8,A11)</p> <p>P8. Retrieve / store information (A5)</p> <p>P9. Use search engines for finding information (A5)</p> <p>P10. Keep track of time (A3)</p>	<p>- ALPeoplePerception</p> <p>- no dedicated module, it could be achieved with external libraries</p> <p>- ALMood</p> <p>- no dedicated module, it could be achieved with external libraries</p> <p>- ALFaceDetection</p> <p>- ALLaser, ALSonar</p> <p>- ALVisionRecognition</p> <p>- ALMemory</p> <p>- ALTabletService</p> <p>- no dedicated module, it could be achieved with different solutions</p>
<p>Left: Robot verbal capabilities involved</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>V1. Ask Yes/ No questions (A2,A4,A7)</p> <p>V2. Ask multiple choice questions (A4,A7,A13)</p>	<p>- ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService</p> <p>- ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService</p>

	<p>V3. Suggest / remind (A2)</p> <p>V4. Context dependent chat (A3,A6,A7,A13)</p> <p>V5. Greet (A10)</p> <p>V6. Encourage/ praise (A3,A7)</p> <p>V7. Report information (A6)</p>	<p>- ALDialog, ALTextToSpeech, ALTabletService</p> <p>- ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService</p> <p>- ALDialog, ALTextToSpeech</p> <p>- ALDialog, ALTextToSpeech, ALTabletService</p> <p>- ALMemory, ALTextToSpeech, ALTabletService</p>
Which "qualitative" robot behavior is expected to be culturally dependent	<p>R1. Choose the topics that is appropriate for time and place and people</p> <p>R2. Invite other people to interact with the robot</p> <p>R2. Do not touch people</p>	
Which behavior is "quantitatively" different depending con culture (volume and tone of voice, distance, velocity, etc)	<p>T1. Speaks with soft tone</p> <p>T2. Speaks in low volume</p> <p>T3. Walks in low speed</p> <p>T4. Stands not too close to Mrs Y</p> <p>T5. Keeps acceptable distance from the visitor</p>	

5.7 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	<p><...> 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. She then trains more, by raising herself up from the chair with the help of the therapist.</p> <p>After her nice exercise, it is time for some green tea. She washes her hands with soap and dries her hands with a towel. She likes to have her tea with some soft azuki-bean jelly¹ brought by her son in his last visit. Soft azuki-bean jelly needs to be cut because it is one block. 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.</p>	<p>1. azuki-bean jelly with a pick</p> 
Functional areas of the house involved	<ul style="list-style-type: none"> F1. Bedroom F2. Training room F3. Kitchen F4. Living room 	
Relevant objects involved	<ul style="list-style-type: none"> 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 (in addition to user and caregiver)	B1. Therapist	
What a human (formal or informal) caregiver shall / can do in this scenario	H1. Help her put the slippers on/OFF H2. Information about today's training 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 involved (top level concepts in the Cultural Knowledge hierarchy)	C1. Japanese way of making tea C2. Japanese sweets C3. Japanese tools to eat soft azuki-beans jelly C4. Japanese way to eat soft azuki-beans jelly	
Which "qualitative" caregiver behavior is expected to be culturally dependent	D1. Able to prepare Japanese tea D2. Motivating exercising as part of living a healthy life D3. Being compassionate to Mrs Y during the training 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 "quantitatively" different depending on culture (volume and tone of voice, distance, velocity, etc.)	E1. Polite and soft tone, low volume of voice E2. Keep some distance for non-family members E3. Moving about in calm slow manner E4. Gestures are gentle and not too exaggerated	
Left: What the robot shall / can do in this scenario Right: Alternative tasks	A1. Locate things as needed (slippers, ball, towel, tea, azuki-bean jelly, plate, pick, spatula) (M5,M8,P5,P6) [H] A2. Bring things as needed (slippers, ball, towel, tea, azuki-	A1'+A2'. Tell Mrs Y the positions of needed objects in the environment, knowing them a priori, or detecting

	<p>bean jelly, plate, pick, spatula) (M2,M3,M5,M7,M8,P1,P5) [H]</p> <p>A3. Provide information about today's training (P2,P4,P8,V5) [E]</p> <p>A4. Remind Mrs Y to train (V2,V4) [E]</p> <p>A5. Accompany Mrs Y to the physical therapist (M6,M8,P5) [H]</p> <p>A6. Greet the physical therapist (M1,P4,V3) [E]</p> <p>A7. Encourage Mrs Y during training (P3,V4) [H/E]</p> <p>A8. Suggest having green tea with jelly. (P9,V1,V2) [E]</p> <p>A9. Remind Mrs Y to be careful while pouring hot water and to switch off the heat (P3,P7,V2) [H]</p> <p>A10. Hold the plate while Mrs Y prepare it (M2,M4,P6) [H]</p>	<p>them by using markers.</p> <p>A2''. Permanently attach a tray to the robot's chest to bring objects</p> <p>A5'. Lead Mrs Y to the training room by walking ahead of her. (Assuming that the whole path is traversable for the robot).</p> <p>A7'. Provide general comments about training</p> <p>A9'. Remind Mrs Y to switch off the heat after the tea (or switch off the heat by communicating with the smart environment).</p> <p>A10'. Hold the plate in place on the table, while Mrs Y prepares it.</p>
<p>Left: Robot motor capabilities required</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>M1. Coordinately move torso/ arms/ hands (A6)</p> <p>M2. Grasp objects (A2,A10)</p> <p>M3. Carry lightweight items (A2)</p> <p>M4. Carry heavyweight items (A10)</p> <p>M5. Navigate autonomously in the house (A1,A2)</p> <p>M6. Follow moving objects / persons (A5)</p> <p>M7. Reach a target / person (A2)</p> <p>M8. Avoid unexpected static or moving obstacles / persons (A1,A2,A5)</p>	<ul style="list-style-type: none"> - ALMotion - no dedicated module, it could be achieved with external libraries - feasible if payload is <300 g - not feasible - ALNavigation - ALVisionRecognition, ALCloseObjectDetection, ALNavigation - ALVisionRecognition, ALCloseObjectDetection, ALNavigation - ALMotion
<p>Left: Robot perceptual capabilities required</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>P1. Locate persons (distance and position) (A2)</p> <p>P2. Recognize posture, gesture, movements (A3)</p> <p>P3. Recognize actions (A7,A9)</p> <p>P4. Recognize persons / faces (A3,A6)</p> <p>P5. Recognize obstacles / uneven ground (A1,A2,A5)</p> <p>P6. Recognize/ Locate items (A1,A10)</p> <p>P7. Recognize fire / flame (A9)</p>	<ul style="list-style-type: none"> - ALPeoplePerception - no dedicated module, it could be achieved with external libraries - no dedicated module, it could be achieved with external libraries - ALFaceDetection - ALLaser, ALSonar - ALVisionRecognition - no dedicated module, it could be

	<p>P8. Retrieve / store information (A3)</p> <p>P9. Keep track of time (A8)</p>	<p>achieved by communicating with the smart environment</p> <ul style="list-style-type: none"> - ALMemory - no dedicated module, it could be achieved with different solutions
<p>Left: Robot verbal capabilities involved</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>V1. Ask multiple choice questions (A8)</p> <p>V2. Suggest / remind (A4, A8,A9)</p> <p>V3. Greet (A6)</p> <p>V4. Encourage/ praise (A4,A7)</p> <p>V5. Report information (A3)</p>	<ul style="list-style-type: none"> - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech - ALDialog, ALTextToSpeech, ALTabletService - ALMemory, ALTextToSpeech, ALTabletService
<p>Which “qualitative” robot behavior is expected to be culturally dependent</p>	<p>R1. Motivating exercising as part of living a healthy life</p> <p>R2. Being compassionate to Mrs Y during the training</p> <p>R3. Showing interest in Mrs Y training session</p> <p>R4. Showing interest in the azuki bean jelly</p>	
<p>Which behavior is “quantitatively” different depending con culture (volume and tone of voice, distance, velocity, etc)</p>	<p>T1. Speaks with soft tone</p> <p>T2. Speaks in low volume</p> <p>T3. Walks in low speed</p> <p>T4. Keeps acceptable distance from Mrs Y, unless needed</p> <p>T5. Not too many gestures</p>	

5.8 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	<p><....> 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.</p> <p>Mrs Y asks her carer to close the door of her room to get dressed.</p> <p>After she dressed, the carer opened the door and told her that her friend Aya has come to visit.</p> <p>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.</p> <p>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.</p> <p>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 into cups to make them all warm enough. She puts some leaves of Gyokuro into a pot then pours the hot water of cups back to the pot and waits for two minutes.³ They enjoy tea and sweets and make a piece of decorative banner together.</p>	<ol style="list-style-type: none"> 1. <i>The carer that has been interviewed says that Japanese elderly trust the doctors very much so always ask doctors to give some medicine or some advice.</i> 2. <i>Origami work of decorative banner</i>  <ol style="list-style-type: none"> 3. <i>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.</i>
Functional areas of the house involved	<p>F1. Living room</p> <p>F2. Kitchen</p>	
Relevant objects involved	<p>O1. Door</p> <p>O2. Origami</p> <p>O3. Gyokuro tea</p>	

	O4. Pot O5. Cups O6. Sweets	
Relevant persons (in addition to user and caregiver)	B1. Carer B2. Friend	
What a human (formal or informal) caregiver shall / can do in this scenario	H1. Open the door for visitor and greet appropriately H2. Welcome the visitor 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, sweets	
Cultural knowledge involved (top level concepts in the Cultural Knowledge hierarchy)	C1. Japanese way of making Gyokuro C2. Japanese sweets C3. Appropriate for friends and relatives to stop by without calling in advance 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” caregiver behavior is expected to be culturally dependent	D1. Proper way of greeting and hospitality D2. Properly addressing the visitor D3. Distance from visitor and non-involvement in discussion D4. Helping in the kitchen, knowing where things are kept if the visitor is close enough to Mrs Y D5. Washes the cups and dishes D6. Touching not desirable for non-family members	
Which behavior is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc.)	E1. Polite and soft tone of voice E2. Keep some distance for non-family members E3. Move gently and with low velocity E4. Smile	
Left: What the robot shall / can do in this scenario Right: Alternative tasks	A1. Ask Mrs Y how she is feeling and if she needs to call the doctor (P2,P4,V1,V2) [E] A2. Place a skype/phone call to the doctor, saying “please hold on” and then asking Mrs Y to talk (P7,V5,V7) [E] A3. Ask Mrs Y information about medicine and doctor’s	A2’. Suggest Mrs Y to call the doctor A4’. Open/close door by connecting to the smart environment. A7’. Show the visitor where to hang coat A10’+A11’. Tell Mrs Y the positions of

	<p>advices and store them (V2,V3,P7) [E]</p> <p>A4. Open/close room doors for Mrs Y / visitor (M6,M8,P6) [H]</p> <p>A5. Greet appropriately the visitor (M5,M6,M7,P1,P4,P5,V4) [E]</p> <p>A6. Welcome the visitor (M9,V3) [E]</p> <p>A7. Take and hang visitor's coat (M1,M2,M3,M6,P1,P6) [H]</p> <p>A8. Tell Mrs Y that her friend just came to visit her (M5,M6,M7,P1,P5,V6) [E]</p> <p>A9. Provide privacy to Mrs Y and friend (M5,P3) [E]</p> <p>A10. Locate things as needed (Origami, tea, pot, cups, sweets) (M5,M7,P5,P6) [H]</p> <p>A11. Bring things as needed (Origami, tea, pot, cups, sweets) (M2,M3,M5,M6,M7,P1,P5) [H]</p> <p>A12. Prepare and bring a tray with tea and sweets (M1,M2,M4,M5,M6,M7,P1,P5,P6) [H]</p> <p>A13. Show interest and ask questions on Mrs Y Origami work (M9,P7,P8,V1,V2,V3) [E]</p> <p>A14. Congratulate with Mrs Y for her Origami skills (V3,V5) [H]</p>	<p>needed objects in the environment, knowing them a priori, or detecting them by using markers.</p> <p>A12'. Locate and indicate objects needed for preparing the tray, knowing their position in the environment, or using markers. Then suggest Mrs Y to bring the tray with food to the table</p> <p>A11''+A12''. Permanently attach a tray to the robot's chest to bring objects</p> <p>A14'. Provide general comments about Origami.</p>
<p>Left: Robot motor capabilities required</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>M1. Coordinately move base/ arms/ hands (A7,A12)</p> <p>M2. Grasp objects (A7,A11,A12)</p> <p>M3. Carry lightweight items (A7,A11)</p> <p>M4. Carry heavyweight items (A12)</p> <p>M5. Navigate autonomously in the house (A5,A8,A9,A10,A11,A12)</p> <p>M6. Reach a target / person (A4,A5,A7,A8,A11,A12)</p> <p>M7. Avoid unexpected static or moving obstacles / persons (A5,A8,A10,A11,A12)</p> <p>M8. Open doors / windows (by communicating with smart environment) (A4)</p> <p>M9. Show feelings (A6,A13)</p>	<ul style="list-style-type: none"> - ALMotion - no dedicated module, it could be achieved with external libraries - feasible if payload is <300 g - not feasible - ALNavigation - ALVisionRecognition, ALCloseObjectDetection, ALNavigation - ALMotion - It could be achieved with a specific communication protocol - ALLeds, ALRobotPosture, ALAnimationPlayer
<p>Left: Robot perceptual</p>	<p>P1. Locate persons (distance and position)</p>	<ul style="list-style-type: none"> - ALPeoplePerception

capabilities required Right: Corresponding Pepper API (if any)	(A5,A7,A8,A11,A12) P2. Recognize emotions (A1) P3. Recognize actions (A9) P4. Recognize persons / faces (A1,A5) P5. Recognize obstacles / uneven ground (A5,A8,A10,A11,A12) P6. Recognize/ Locate items (A4,A7,A10,A12) P7. Retrieve / store information (A2,A3,A13) P8. Recognize dialogue context (A13)	- ALMood - no dedicated module, it could be achieved with external libraries - ALFaceDetection - ALLaser, ALSonar - ALVisionRecognition - ALMemory - ALSpeechRecognition
Left: Robot verbal capabilities involved Right: Corresponding Pepper API (if any)	V1. Ask Yes/ No questions (A1,A13) V2. Ask multiple choice questions (A1,A3,A13) V3. Context dependent chat (A3,A6,A13,A14) V4. Greet (A5) V5. Encourage/ praise (A2,A14) V6. Report information (A8) V7. Place a phone call (A2)	- ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech - ALDialog, ALTextToSpeech, ALTabletService - ALMemory, ALTextToSpeech, ALTabletService - ALTabletService, or a specific communication protocol
Which “qualitative” robot behavior is expected to be culturally dependent	R1. Proper way of greeting and hospitality R2. Respecting the relationship between Mrs Y and visitor R3. Non-involvement in discussion with the visitor R4. Being ready to help during tea preparation	
Which behavior is “quantitatively” different depending con culture (volume and tone of voice, distance, velocity, etc)	T1. Speaks with soft tone T2. Speaks in low volume T3. Stands not too close to Mrs Y T4. Keeps acceptable distance from the visitor T5. Walks in low speed	

5.9 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	<p><...> 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 her. She goes to the entrance with the carer and welcomes all there. He thanks the carer then and says "Grandmother¹, how are you?". She smiles and replies "I'm fine, thank you everybody for coming all the way²". They take off their shoes at the entrance³, leave them in the shoe box and put the guests' slippers on .</p> <p>They go to the lounge and the carer tells them he/she will leave and come back after one hour. Mrs Y and her son's family sit on the sofa close together. They bring Mrs Y'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.</p> <p>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.</p> <p>She asks him when he will visit her again and he reminds her that next week is Hinamatsuri⁴ so he will be coming the day before Hinamatsuri to take her so that she can celebrate it with the family.</p> <p>They have to go now and they say goodbye.</p>	<ol style="list-style-type: none"> 1. Japanese call family member by a role from the perspective of the youngest generation (in this case, his grandchildren), not name. 2. Greetings 3. Entering the house 4. Japanese festival for girls on 3rd March. One of his children is a girl.
Functional areas of the house involved	<p>F1. Entrance of the care house</p> <p>F2. Conversation Lounge</p>	
Relevant objects involved	<p>O1. Slippers for the guests</p>	



	<ul style="list-style-type: none"> O2. Shoe box O3. Sofa O4. Sweets and tea O5. Reading glasses O6. Coat O7. Coat stand O8. Smartphone
Relevant persons (in addition to user and caregiver)	<ul style="list-style-type: none"> B1. The carer B2. Son and his family(informal carer)
What a human (formal or informal) caregiver shall / can do in this scenario	<ul style="list-style-type: none"> H1. Prepare the slippers for son's family H2. Encourage her to go for walk 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 involved (top level concepts in the Cultural Knowledge hierarchy)	<ul style="list-style-type: none"> C1. Greeting customs C2. Level of communication and detail of exchange of information C3. Son /parent relationship in Japanese culture C4. Use of words in Japan C5. Expectation that families celebrate festivals together C6. Japanese festival and preparation
Which "qualitative" caregiver behavior is expected to be culturally dependent	<ul style="list-style-type: none"> D1. Way of greeting with non-family members D2. involvement in discussion by non-family D3. Mother –son way of greeting, talking 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 "quantitatively" different	<ul style="list-style-type: none"> E1. Polite and soft tone, low volume of voice E2. Keep some distance for non-family members

depending on culture (volume and tone of voice, distance, velocity, etc.)	<p>E3. Moving about in calm slow manner</p> <p>E4. Gestures are gentle and not too exaggerated</p>	
<p>Left: What the robot shall / can do in this scenario</p> <p>Right: Alternative tasks</p>	<p>A1. Move to the entrance with Mrs Y (M8,M10,M11,P1,P7) [E]</p> <p>A2. Welcome the visitors (M1,P5,V5) [E]</p> <p>A3. Ask son and family to put the shoes in the shoe box (V2,V3) [E]</p> <p>A4. Locate things as needed (slippers, sweets, tea, reading glasses) (M6,M10,P6,P7) [H]</p> <p>A5. Bring things as needed (slippers, sweets, tea, reading glasses) (M3,M4,M6,M9,M10,P1,P6) [H]</p> <p>A6. Provide privacy to Mrs Y and family (M6,P4) [E]</p> <p>A7. Ask Mrs Y and family if they want something to drink (P4,P9,V1,V2) [E]</p> <p>A8. Prepare and bring a tray with sweets and tea (M3,M4,M5,M6,M9,M10,P1,P6,P7) [H]</p> <p>A9. Take photos of Mrs Y and family (M7,P10) [E]</p> <p>A10. Encourage Mrs Y to go for a walk (P2,V3,V6) [E]</p> <p>A11. Help Mrs Y to put the coat on (M2,M3,M4,M9,P1,P2,P7) [H]</p> <p>A12. Switch on and off lights (by connecting to the smart environment) (M12,P4) [E]</p> <p>A13. Stay back at the house (M6) [E]</p> <p>A14. Say goodbye to Mrs Y son and his family (reply to the son's goodbye) (M1,M9,P4,P5) [E]</p> <p>A15. Ask Mrs Y how she felt about her son's visit (P3,V4) [E]</p> <p>A16. Remind Mrs Y that the son's family will be coming the day before Hinamatsuri (M13,P8,V3,V4,V7) [E]</p> <p>A17. Ask the son the time of next visit (or to enter it via the touch screen) (V1,V2,V4) [E]</p>	<p>A4'+A5'. Tell Mrs Y the positions of needed objects in the environment, knowing them a priori, or detecting them by using markers.</p> <p>A8'. Locate and indicate objects needed for preparing the tray, knowing their position in the environment, or using markers</p> <p>Then suggest Mrs Y to bring the tray with food to the table</p> <p>A5''+A8''. Permanently attach a tray to the robot's chest to bring objects</p> <p>A11'. Bring a hanger (on wheels) close to Mrs Y, and then bring it back to its place again.</p> <p>A12'. Remind Mrs Y to switch on / off the lights</p>
<p>Left: Robot motor capabilities required</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>M1. Coordinately move torso/ arms/ hands (A2,A14)</p> <p>M2. Coordinately move base/ arms/ hands (A11)</p> <p>M3. Grasp objects (A5,A8,A11)</p> <p>M4. Carry lightweight items (A5,A8,A11)</p>	<p>- ALMotion</p> <p>- ALMotion</p> <p>- no dedicated module, it could be achieved with external libraries</p> <p>- feasible if payload is <300 g</p>

	<p>M5. Carry heavyweight items (A8)</p> <p>M6. Navigate autonomously in the house (A4,A5,A6,A8,A13)</p> <p>M7. Track moving objects / persons (A9)</p> <p>M8. Follow moving objects / persons (A1)</p> <p>M9. Reach a target / person (A5,A8,A11,A14)</p> <p>M10. Avoid unexpected static or moving obstacles / persons (A1,A4,A5,A8)</p> <p>M11. Open doors / windows (by communicating with smart environment) (A1)</p> <p>M12. Operate appliance (by communicating with smart environment) (A12)</p> <p>M13. Show feelings (A16)</p>	<ul style="list-style-type: none"> - not feasible - ALNavigation - ALLandmarkDetection, ALColorBlobDetection, ALVisionRecognition, ALCloseObjectDetection - ALVisionRecognition, ALCloseObjectDetection, ALNavigation - ALVisionRecognition, ALCloseObjectDetection, ALNavigation - ALMotion - It could be achieved with a specific communication protocol - It could be achieved with a specific communication protocol - ALLeds, ALRobotPosture, ALAnimationPlayer
<p>Left: Robot perceptual capabilities required</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>P1. Locate persons (distance and position) (A1,A5,A8,A11)</p> <p>P2. Recognize posture, gesture, movements (A10,A11)</p> <p>P3. Recognize emotions (A15)</p> <p>P4. Recognize actions (A6,A7,A12,A14)</p> <p>P5. Recognize persons / faces (A2,A14)</p> <p>P6. Recognize obstacles / uneven ground (A4,A5,A8)</p> <p>P7. Recognize/ Locate items (A1,A4,A8,A11)</p> <p>P8. Retrieve / store information (A16)</p> <p>P9. Recognize dialogue context (A7)</p> <p>P10. Take pictures (A9)</p>	<ul style="list-style-type: none"> - ALPeoplePerception - no dedicated module, it could be achieved with external libraries - ALMood - no dedicated module, it could be achieved with external libraries - ALFaceDetection - ALLaser, ALSonar - ALVisionRecognition - ALMemory - ALSpeechRecognition - ALPhotoCapture
<p>Left: Robot verbal capabilities involved</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>V1. Ask Yes/ No questions (A7,A17)</p> <p>V2. Ask multiple choice question (A3,A7,A15,A17)</p>	<ul style="list-style-type: none"> - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService

	<p>V3. Suggest / remind (A3,A10,A16)</p> <p>V4. Context dependent chat (A15,A16,A17)</p> <p>V5. Greet (A2,A14)</p> <p>V6. Encourage/ praise (A10)</p> <p>V7. Report information (A16)</p>	<p>- ALDialog, ALTextToSpeech, ALTabletService</p> <p>- ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService</p> <p>- ALDialog, ALTextToSpeech</p> <p>- ALDialog, ALTextToSpeech, ALTabletService</p> <p>- ALMemory, ALTextToSpeech, ALTabletService</p>
Which “qualitative” robot behavior is expected to be culturally dependent	<p>R1. Way of greeting with non-family members</p> <p>R2. Invite other people to interact with the robot</p> <p>R3. Way of greeting and talking between mother and son</p> <p>R4. Communicating using indirect questions</p> <p>R5. Do not touch people</p>	
Which behavior is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc)	<p>T1. Speaks with soft tone</p> <p>T2. Speaks in low volume</p> <p>T3. Walks in low speed</p> <p>T4. Stands not too close to Mrs Y</p> <p>T5. Keeps acceptable distance from the visitor</p>	

5.10 MRS YAMADA - PREPARING FOR DINNER, DINNER PLANNING

Scenario name	Mrs Yamada - Preparing for dinner, Dinner planning	
Time of the day	Pre-dinner time	
General Description	<p><...> On Sunday the care center has Setsubun festival that celebrates the coming of spring.¹</p> <p>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 for elderly to eat it without cutting, they eat pieces of it orienting their faces to the blessed direction of the year.</p> <p>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 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.</p> <p>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.</p>	<p>1. Setsubun is 3rd Feb and means to divide seasons (winter <-> spring).</p> <p>2. Soy beans and Ehomaki. Japanese usually eat Ehomaki without cutting, orienting their face to the blessed direction that is different from every last year.</p>  <p>3. Masks and beans for Mamemaki. Oni = devil, soto = out, Fuku = blessed, uchi =inside.</p> 
Functional areas of the house involved	<p>F1. Kitchen</p> <p>F2. Garden</p> <p>F3. Dining Room</p>	

Relevant objects involved	O1. Bag of Soybean O2. Plate O3. Mask of a devil O2. Ehomaki	
Relevant persons (in addition to user and caregiver)	B1. Carer B2. Other elderly	
What a human (formal or informal) caregiver shall / can do in this scenario	H1. Ask to help open the bags of soy beans H2. Put some beans into plates 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 they eat Ehomaki	
Cultural knowledge involved (top level concepts in the Cultural Knowledge hierarchy)	C1. Japanese festival of Setsubun C2. Japanese way to celebrate coming spring C3. Knowledge on how to do Mamemaki C4. Knowledge on how to eat Ehomaki	
Which “qualitative” caregiver behavior is expected to be culturally dependent	D1. Planning of scattering the beans D2. Awareness about who should be the devil	
Which behavior is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc.)	E1. Polite and soft tone, low volume of voice E2. Moving about in calm slow manner E3. Gestures are gentle and not too exaggerated	
Left: What the robot shall / can do in this scenario Right: Alternative tasks	A1. Remind Mrs Y that on Sunday the care center will celebrate Sestubun festival (P5,P8,V3) [E] A2. Ask Mrs Y information about Setstubun, Mamemaki and Ehomaki (P3,V1,V2,V4) [E] A3. Encourage Mrs Y to help in preparing soybean plates (M9,P8,V4,V6) [E]	A4'+A5'. Tell Mrs Y the positions of needed objects in the environment, knowing them a priori, or detecting them by using markers. A3'+A6'. Encourage Mrs Y to help in preparing soybean plates

	<p>A4. Locate things as needed (soybeans, plates, mask, ehomaki, towel) (M5,M8,P6,P7) [H]</p> <p>A5. Bring things as needed (soybeans, plates, mask, ehomaki, towel) (M2,M3,M4,M7,M8,P1,P6) [H]</p> <p>A6. Hold a plate while Mrs Y put beans on it (M1,M2,M3,M6,P1,P2,P4) [H]</p> <p>A7. Deliver plates to all elderly (M3,M5,M7,M8,M9,P1,P6,V5) [H]</p> <p>A8. Suggest Mrs Y to place the devil's mask on robot's face (P8,V3,V6) [E]</p> <p>A9. Move with Mrs Y to the garden (and then back to the care center) (M6,M8,P1,P6) [H]</p> <p>A10. Play the role of the devil, trying to run away from the soybeans (M5,M8,M9,P3,P4,P6,P9,V4) [H]</p> <p>A11. Remind Mrs Y to wash her hands (P8,V3) [E]</p> <p>A12. Prepare a tray with ehomaki (M2,M3,P7)[H]</p> <p>A13. Carry a tray with ehomaki to the table (M1,M4,M5,M7,M8,P1,P6) [H]</p> <p>A14. Suggest Mrs Y to think about the wish she will make eating Ehomaki (M9,P3,P8,V3,V4,V6) [E]</p> <p>A15. Tell Mrs Y what is the blessed direction this year (P4,P8,V3) [E]</p>	<p>A7'. Encourage all elderly to collect their plates</p> <p>A9'+A10'. Play the role of the devil, but inside the home, running away from any person.</p> <p>A12'. Help Mrs Y to prepare a tray with ehomaki by providing advise.</p> <p>A13'. Suggest Mrs Y to bring the tray to the table.</p> <p>A5''+A13''. Permanently attach a tray to the robot's chest to bring objects</p>
<p>Left: Robot motor capabilities required Right: Corresponding Pepper API (if any)</p>	<p>M1. Coordinately move base/ arms/ hands (A6,A13)</p> <p>M2. Grasp objects (A5,A6,A12)</p> <p>M3. Carry lightweight items (A5,A6,A7,A12)</p> <p>M4. Carry heavyweight items (A13)</p> <p>M5. Navigate autonomously in the house (A4,A5,A7,A10,A13)</p> <p>M6. Follow moving objects / persons (A6,A9)</p> <p>M7. Reach a target / person (A5,A7,A13)</p> <p>M8. Avoid unexpected static or moving obstacles / persons (A4,A5,A7,A9,A10,A13)</p>	<ul style="list-style-type: none"> - ALMotion - no dedicated module, it could be achieved with external libraries - feasible if payload is <300 g - not feasible - ALNavigation - ALVisionRecognition, ALCloseObjectDetection, ALNavigation - ALVisionRecognition, ALCloseObjectDetection, ALNavigation - ALMotion

	M9. Show feelings (A3,A7,A10,A14)	- ALLeds, ALRobotPosture, ALAnimationPlayer
Left: Robot perceptual capabilities required Right: Corresponding Pepper API (if any)	P1. Locate persons (distance and position) (A5,A6,A7,A9,A13) P2. Recognize posture, gesture, movements (A6) P3. Recognize emotions (A2,A10,A14) P4. Recognize actions (A6,A10,A15) P5. Recognize persons / faces (A1) P6. Recognize obstacles / uneven ground (A4,A5,A7,A9,A10,A13) P7. Recognize/ Locate items (A4,A12) P8. Retrieve / store information (A1,A3,A8,A11,A14,A15) P9. Keep track of time (A10)	- ALPeoplePerception - no dedicated module, it could be achieved with external libraries - ALMood - no dedicated module, it could be achieved with external libraries - ALFaceDetection - ALLaser, ALSonar - ALVisionRecognition - ALMemory - no dedicated module, it could be achieved with different solutions
Left: Robot verbal capabilities involved Right: Corresponding Pepper API (if any)	V1. Ask Yes/ No questions (A2) V2. Ask multiple choice questions (A2) V3. Suggest / remind (A1,A8,A11,A14,A15) V4. Context dependent chat (A2,A3,A10,A14) V5. Greet (A7) V6. Encourage/ praise (A3,A8,A14)	- ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech - ALDialog, ALTextToSpeech, ALTabletService
Which “qualitative” robot behavior is expected to be culturally dependent	R1. Showing awareness of traditions and customs R2. Supporting caregivers in the playing the “devil” role	
Which behavior is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc)	T1. Speaks with soft tone T2. Speaks in low volume T3. Walks in low speed T4. Not too many gestures	

6. MR YAMADA – SCRIPT

Mr Yamada is a 75 years old Japanese man who used to perform a tea ceremony and Ikebana-Japanese flower arrangement- in Kobe Japan, for 40 years. His wife is a Japanese calligraphy teacher at schools in Osaka and stays with him in Kobe only during weekends. He has one son and one daughter who are both married and live in Tokyo. His daughter's husband is Korean and the family go to Seoul instead of Kobe for holidays every years, while his son's family visit Mr Yamada at least during the Obon holidays in the summer and New Year's holidays in winter. They try to visit him more often, but it is too difficult to manage the long journey and high expenses for the trip from Tokyo to Kobe.

Mr Yamada was diagnosed with thyroid cancer 7 years ago, and had a total thyroidectomy. After the operation, he was prescribed thyroid hormone replacement tablets which he takes every morning. Since he often forgot to take the replacement, his wife and his son try to check every day by phone call, but they also forget to check it sometimes. He feels very tired and cold without the hormone. Depending on his physical conditions, he needs to take Vitamin D and Calcium as well. His doctor asked to see him once in 3 months at his hospital in Tokyo to check him after care, but he cannot manage the journey by himself.

As a result of his operation, he sometimes suffers from depression. He misses his family more than usual when he feels depressed. His wife recently suggested that he stays in a care facility during the weekdays so that he is not alone and at the same time he gets the care he needs. He moved into a care home recently.

Today for breakfast¹ he has green tea, baked salmon, miso soup, rice, boiled vegetables, and fruits. He does not like Natto² so he does not take it always. He 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. Mr Yamada will find his tablets and put them on the table in order not to forget to take them when he finishes her breakfast. After eating the

1. *Common food for breakfast (rice, miso soup, green tea, baked fish, boiled vegetables, fruits, yogurt)*
2. *Fermented beans*
3. *Routine in Japanese care house*

breakfast, he has his vital signs checked³ in the lounge. The nurse and the carer check her breathing, blood pressure, body temperature, heart rate, and so on.

After the vital checks, he goes into his room for dressing. Mr Y had many Kimono⁴ from several years ago but he has no more chances to put them on, so he chose the good ones and gave them to his son and daughter's husband. He asked his daughter to rework some scarfs, drawstring bags with rest of them.

After moving to a care house, he puts easy-to-wear⁵ clothes but sometimes he enjoys adding scarf. He wears a shirt and a trousers then chooses one scarf made of Kimono cloth. He then combs his hair nicely.

After dressing Mr Yamada will change the water of a flower vase and pour water into a small cup. Then he 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. He will light an incense and a candle, then ring a bell once. He will spend there a few minutes, sitting on the chair, with his hands close together and closed eyes. He thought of his brother in heaven and talked to him about recent life then asked him to watch out for his safety.

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

After he dressed, the carer opened the door and tells him that his friend Masaru is here to visit.

Mr Y has hobbies such as playing Shogi⁸. They always enjoy Shogi games and sometimes Masaru asks Mr Y to teach how to play it well.

Today Mr Y teaches Masaru how to play Shikenbisha (Fourth file rock) because Masaru has just begun to play Shogi recently.

Masaru brings some sweets to enjoy with Mr Y who thanks him and makes Japanese Gyokuro tea. He boiled water and poured some into an empty pot and then poured the hot water from the pot into cups to warm them. He puts some

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)*



7. *The carer that has been interviewed says that Japanese elderly trust the doctors very much so always ask doctors to give some medicine or some advice*

8. *Shogi*



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 played Shogi games together.

It is now mid-morning, he would like to listen to a radio, having Japanese green tea. He boils water then puts some leaves of tea into a teapot then pours hot water in the pot.

He turns the radio on then listen to her favourite programs. He 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, he decides to go down the first floor to watch TV. He liked to watch NHK¹¹. He will watch the news and cooking program for a while. He will then go back to his room and talk with his children on the phone. They have their regular time, and he or they will call every day.

Mr Y eats lunch in the dining room on the first floor with other residents. They have a fixed schedule for lunch. It is his 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.

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

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

After napping for half hour Mr Y wakes up refreshed and looks for his slippers; he puts them on and goes down to the first floor. The physical therapist waits for him to help him with the training activities of daily life. In the training session, he uses a

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.*

10. *Japanese traditional ballad called as Enka*

11. *Japanese Channel for education and news*

12. *Japanese wet towel*



13. *Typical lunch in Japan.*



ball to train the joint range of motion with the therapist. Afterwards he trains to raise himself up from the chair with the therapist.

After his nice exercise, it is time for some green tea. He washes his hand with soap and dries his hands with a towel. He likes to have his tea with some soft azuki-bean jelly¹⁴ brought by his son in his last visit. Soft azuki-bean jelly needs to be cut because it is one block. He prepares a small plate and a pick then uses a small plastic spatula and cuts two pieces of jelly. Then he takes care not to pour hot tea over his hands by mistake.

Later he 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. Mr Y reminds the related events and tells all about his 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 books¹⁵ 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 Mr Y that his son and his family are due to arrive at the care house to visit him. He goes to the entrance with the carer and welcomes them. His son thanks the carer and says “Geandfather¹⁶, how are you?” Mr Y smiles and replies “I’m fine, thank you everybody for coming all the way¹⁷”. They take off their shoes at the entrance¹⁸, leave them in the shoe box and put the slippers for the guests.

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

14. Azuki-bean jelly with a pick and Japanese tea



15. Sutra book



16. Japanese call family member by a role from the perspective of the youngest generation (in this case, his grandchildren), not name

17. Greetings

18. Entering the house

Before they leave his son's wife helps Mr Y to put his coat on because he will go to the entrance to see them off. His son tells Mr Y, that keeping exercising is good for him.

Mr Y asks his son when he will visit him again and he reminds him that next week is Hinamatsuri¹⁹ so he will be coming the day before Hinamatsuri to take him so that he can celebrate it with the family.

On Sunday the care center has Setsubun festival that celebrates the coming of spring²⁰.

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 Ehomaki²¹ that means roll of blessed direction. It is dangerous for the elderly to eat it without cutting it; they eat pieces of it orienting to the blessed direction.

Mr 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)²² 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"²³.

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.

19. Japanese festival for girls on 3rd March. At least on of his children should be a girl in this scenario.

20. Setsubun is 3rd Feb and means to divide seasons (winter <-> spring).

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



22. Masks and beans for Mamemaki



23. Oni= devil, soto=out, Fuku=blessed, uchi=inside

6.1 MR YAMADA – MORNING ROUTINE, BREAKFAST

Scenario name	Mr Yamada – Morning routine, Breakfast	
Time of the day	Morning	
General Description	<p><...> Mr Y has green tea, baked salmon, miso soup, rice, boiled vegetables, and fruits from 7:30 for breakfast¹. He doesn't like Natto² so he doesn't take it always.</p> <p>He 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.</p> <p>He will also find his tablets and put them on the table in order not to forget to take them when he finishes his breakfast.</p> <p>After eating the breakfast, he has her vital check³ in lounge. The nurse and the carer check his breathing, blood pressure, body temperature, heart rate, and so on.</p>	<p>1. Common foods for breakfast (rice, miso soup, green tea, baked fish, boiled vegetables, fruits, yogurt)</p> <p>2. Fermented beans</p> <p>3. Routine in Japanese care house</p>
Functional areas of the house involved	<p>F1. Dining room</p> <p>F2. Lounge</p>	
Relevant objects involved	<p>O1. Plates/glasses</p> <p>O2. Pot for tea</p> <p>O3. Cutlery</p> <p>O4. Table</p> <p>O5. Chair</p>	
Relevant persons (in addition to user and caregiver)	<p>B1. Other elderly</p> <p>B2. Carer</p>	
What a human (formal or informal) caregiver shall / can do in this scenario	<p>H1. Say Good morning</p> <p>H2. Remind him of the time for breakfast</p> <p>H3. Tell the today's breakfast menu</p> <p>H4. Serve breakfast</p> <p>H5. Ask whether he would like to have more tea</p> <p>H6. Bring a teapot</p>	

	H7. Remind him about his medication H8. Remind him about the vital check	
Cultural knowledge involved (top level concepts in the Cultural Knowledge hierarchy)	C1. Japanese breakfast dishes	
Which “qualitative” caregiver behavior is expected to be culturally dependent	D1. Japanese breakfast and what it could entail D2. Awareness of Mr Y’s preferences (not having Natto etc) D3. Polite and respectful way of addressing Mr Y. ‘Please’ and ‘Thank you’ prefix most dialogue.	
Which behavior is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc.)	E1. Gentle volume of voice E2. Moving about at slow speed	
Left: What the robot shall / can do in this scenario Right: Alternative tasks	A1. Greet Mr Y, saying “Good morning” and asking him how he is feeling today (M5,M6,M7,P1,P2,P3,P4,V2,V4,V5) [E] A2. Remind Mr Y the time of breakfast (P6,V6,V7) [E] A3. Tell Mr Y the today’s breakfast menu, and praise on eating a healthy and balanced diet (M7,P6,V6,V7) [E] A4. Move to the dining room with Mr Y (M4,M6,P2,P4) [H] A5. Greet all other elderly (M7,P3,V5) [E] A6. Ask Mr Y if he needs help in preparing his tray (P2,V1) [E] A7. Locate objects as needed (plates, glasses, pots) (M3,M6,P4,P5) [H] A8. Bring objects as needed (plates, glasses, pots) (M1,M2,M3,M5,M6,P4,P5) [H] A9. Prepare a tray with food (M1,M3,P5,P6) [H] A10. Keep company to Mr Y while eating (P2,V1,V2,V4) [E] A11. Ask MrsY if he enjoyed his breakfast and comment on his dietary choices (M7,P2,V1,V4) [H] A12. Remind Mr Y about medication and vital check (P6,V3,V6) [E] A13. Move with Mr Y to the lounge for vital check (M4,M6,P4) [H]	A4’. Lead Mr Y to the dining room by walking ahead of him. (Assuming that the whole path is traversable for the robot). A7’+A8’. Tell Mr Y the positions of needed objects in the environment, knowing them a priori, or detecting them by using markers. A9’. Locate and indicate objects needed for preparing the tray, knowing their position in the environment, or using markers A8’’+A9. Permanently attach a tray to the robot’s chest to bring objects A11’. Provide general comments about breakfast A13’. Suggest Mr Y to go to the lounge for vital check.

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

	V7. Report information (A2,A3)	ALTabletService - ALMemory, ALTextToSpeech, ALTabletService
Which “qualitative” robot behavior is expected to be culturally dependent	R1. Showing awareness of Mr Y’s preferences R2. Showing awareness of Japanese breakfast and what it could entail	
Which behavior is “quantitatively” different depending con culture (volume and tone of voice, distance, velocity, etc)	T1. Speaks with soft tone T2. Speaks in low volume T3. Walks in low speed	

6.2 MR YAMADA – MORNING ROUTINE, DRESSING

Scenario name	Mr Yamada – Morning routine, Dressing	
Time of the day	Morning	
General Description	<p><....> Mr Y had many Kimono¹ for several years ago but he has no more chances to put them on, so he chose good ones and gave them to his son. He asked his daughter to rework some scarfs, drawstring bags with rest of them.</p> <p>After moving to a care house, he puts easy-to-wear² but sometimes adds such scarfs to enjoy dressing.</p> <p>He wears a shirt and trousers then chooses one scarf made of Kimono cloth.</p> <p>He combs his hair nicely.</p>	<p><i>1. Japanese traditional dresses</i></p> <p><i>2. 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. In many cases have only one wardrobe in a curtained area in one room that other elderly also stay.</i></p>
Functional areas of the house involved	<p>F1. Bedroom – Bed</p> <p>F2. Bedroom – Wardrobe</p>	
Relevant objects involved	<p>O1. shirt, trousers</p> <p>O2. Scarf</p> <p>O3. Comb</p>	
Relevant persons (in addition to user and caregiver)	<p>B1. No-one</p>	
What a human (formal or informal) caregiver shall / can do in this scenario	<p>H1. Help Mr Y to wear his shirt, if he needs help</p> <p>H2. Help Mr Y to choose scarf</p> <p>H3. Bring comb</p>	
Cultural knowledge involved (top level concepts in the Cultural Knowledge hierarchy)	<p>C1. Japanese way to rework dressing</p>	
Which “qualitative” caregiver behaviour is expected to be culturally dependent	<p>D1. The way of praising depends on culture and current emotion</p> <p>D2. Remember his favourite scarf</p> <p>D3. Not rushing Mr Y</p>	

Which behaviour is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc.)	<p>E1. Polite and soft tone of voice</p> <p>E2. Gentle reminder about the hairdresser</p> <p>E3. Distance kept by caregiver from Mr Y is a parameter that depends on culture</p>	
<p>Left: What the robot shall / can do in this scenario</p> <p>Right: Alternative tasks</p>	<p>A1. Locate objects if needed (clothes, scarf, comb) (M4,M7,P5,P6) [H]</p> <p>A2. Bring objects if needed (clothes, scarf, comb) (M2,M3,M4,M5,M7,P1,P5) [H]</p> <p>A3. Recommend wearing a scarf (P7,V2,V3,V4) [E]</p> <p>A4. Open wardrobe with clothes (M1,M2,M5,M6,M7,M8,P5,P6) [H]</p> <p>A5. Ask Mr Y if he needs help while getting dressed (P4,V1) [E]</p> <p>A6. Help Mr Y to wear clothes by holding them (M1,M2,M3,M5,M7,P1,P2,P4,P5,P6) [H]</p> <p>A7. Provide privacy to Mr Y (M4,P4,P5) [E]</p> <p>A8. Encourage Mr Y to comb his hair (M9,P3,P7,V2,V4) [E]</p> <p>A9. Praise Mr Y for his look (M9,P3,V3,V4) [E]</p>	<p>A1'+A2'. Tell Mr Y the positions of needed objects in the environment, knowing them a priori, or detecting them by using markers.</p> <p>A2''. Permanently attach a tray to the robot's chest to bring objects</p> <p>A4'. Open the wardrobe, by controlling its automatic sliding doors within the smart home</p> <p>A6'. Bring a hanger (on wheels) close to Mr Y, and then bring it back to its place again.</p>
<p>Left: Robot motor capabilities required</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>M1. Coordinately move base/ arms/ hands (A4,A6)</p> <p>M2. Grasp objects (A2,A4,A6)</p> <p>M3. Carry lightweight items (A2,A6)</p> <p>M4. Navigate autonomously in the house (A1,A2,A7)</p> <p>M5. Reach a target / person (A2,A4,A6)</p> <p>M6. Pull objects (A4)</p> <p>M7. Avoid unexpected static or moving obstacles / persons (A1,A2,A4,A6)</p> <p>M8. Open doors / windows (by communicating with smart environment) (A4)</p> <p>M9. Show feelings (A8,A9)</p>	<ul style="list-style-type: none"> - ALMotion - no dedicated module, it could be achieved with external libraries - feasible if payload is <300 g - not feasible - ALNavigation - no dedicated module, it could be achieved with external libraries - ALMotion - It could be achieved with a specific communication protocol - ALLeds, ALRobotPosture, ALAnimationPlayer
Left: Robot perceptual capabilities required	<p>P1. Locate persons (distance and position) (A2,A6)</p> <p>P2. Recognize posture, gesture, movements (A6)</p>	<ul style="list-style-type: none"> - ALPeoplePerception - no dedicated module, it could be

<p>Right: Corresponding Pepper API (if any)</p>	<p>P3. Recognize emotions (A8,A9) P4. Recognize actions (A5,A6,A7) P5. Recognize obstacles / uneven ground (A1,A2,A4,A6,A7) P6. Recognize/ Locate items (A1,A4,A6) P7. Retrieve / store information (A3,A8)</p>	<p>achieved with external libraries - ALMood - no dedicated module, it could be achieved with external libraries - ALLaser, ALSonar - ALVisionRecognition - ALMemory</p>
<p>Left: Robot verbal capabilities involved Right: Corresponding Pepper API (if any)</p>	<p>V1. Ask Yes/ No questions (A5) V2. Suggest / remind (A3,A8) V3. Context dependent chat (A3,A9) V4. Encourage/ praise (A3,A8,A9)</p>	<p>- ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech, ALTabletService</p>
<p>Which “qualitative” robot behavior is expected to be culturally dependent</p>	<p>R1. Use the right words for praising R2. Not rushing Mr Y</p>	
<p>Which behavior is “quantitatively” different depending con culture (volume and tone of voice, distance, velocity, etc)</p>	<p>T1. Speaks with soft tone T2. Speaks in low volume T3. Keeps right distance from Mr Y T4. Frequency of reminders is not too high</p>	

6.3 MR YAMADA - PRE LUNCH ROUTINE, READING/AUDIO/TV/MUSIC


Scenario name	Mr Yamada - Pre Lunch routine, Reading/audio/Tv/music	
Time of the day	mid-Morning	
General Description	<p><...> it is now mid-morning, and Mr Y would like to listen to a radio, having Japanese green tea. He boils water then puts some leaves of tea into a teapot then pours hot water.</p> <p>He turns the radio on then listens to his favourite program. He listens to some news and enjoys some music. The program is for elderly people so music is not recent pops but Japanese ballads¹.</p> <p>After listening to the radio, he decides to go down the first floor to watch TV. He liked to watch NHK². He will watch the news and cooking program for a while. He will then go back to his room and talk with his children on the phone. They have their regular time. He or they will call every day.</p>	<p>1. Japanese traditional ballad called as Enka</p> <p>2. Japanese Channel for education and news</p>
Functional areas of the house involved	<p>F1. kitchen</p> <p>F2. living room</p> <p>F3. Lounge with TV</p>	
Relevant objects involved	<p>O1. TV</p> <p>O2. Radio</p> <p>O3. Phone</p> <p>O6. Armchair</p> <p>O7. Tea bags</p> <p>O8. Tea cup</p> <p>O9. Tea pot</p>	
Relevant persons	<p>B1. No-one</p>	
What a human (formal or informal) caregiver shall / can do in this scenario	<p>H1. Help him switch on the radio or TV and find the correct channel (channel of her choice)</p> <p>H2. Bring his phone</p> <p>H3. Reminder him to call or call family member</p> <p>H4. Carry his tea cup in the living room</p>	
Cultural knowledge	<p>C1. Appreciate the importance of Japanese music and Japanese TV programmes.</p>	

involved (top level concepts in the Cultural Knowledge hierarchy)	C2. Understand the importance of keeping in regular contact with her family.	
Which “qualitative” caregiver behavior is expected to be culturally dependent	D1. Asking politely if he will need help with any of the activities (starting the TV or the radio, finding the channel) D2. Reminding his politely to call his son D3. Bring items and offering them gently D4. Privacy when talking with family	
Which behavior is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc.)	E1. Polite and soft tone of voice E2. Move slowly and gently in the house	
Left: What the robot shall / can do in this scenario Right: Alternative tasks	A1. Ask Mr Y how he feels and if he wants a cup of tea (P1,P2,P4,P7,V1,V2) [E] A2. Remind Mr Y that his favourite radio show is on (P7,P8,V3,V7) [E] A3. Switch on/off radio and put the correct channel/volume (M6,M7) [H] A4. Locate objects as needed (phone, tea cup) (M3,M5,P5,P6) [H] A5. Bring objects as needed (phone, tea cup) (M1,M2,M3,M4,M5,P1,P5) [H] A6. Encourage Mr Y to watch TV with the other elderly (P3,P7,V3,V4,V5) [E] A7. When Mr Y is back, remind him to call his family (M8,P3,P7,V3) [E] A8. Ask Mr Y if he wants to use skype/facetime or phone (V2,V3) [E] A9. Place a skype/phone call, saying “please hold on” and then asking Mr Y to talk (M7,P7,V4,V5,V6) [E] A10. Provide privacy to Mr Y while talking with family (M3,M5,P3,P5) [E]	A3'. Connect to internet radio and let Mr Y listen to his favorite radio program via the Pepper's loudspeakers. A3''. Connect to internet radio TV and let Mr Y watch her favorite TV program via the Pepper's screen. A4'+A5'. Tell Mr Y the positions of needed objects in the environment, knowing them a priori, or detecting them by using markers. A5''. Permanently attach a tray to the robot's chest to bring objects
Left: Robot motor capabilities required	M1. Grasp objects (A5)	- no dedicated module, it could be achieved with external libraries

<p>Right: Corresponding Pepper API (if any)</p>	<p>M2. Carry lightweight items (A5) M3. Navigate autonomously in the house (A4,A5,A10) M4. Reach a target / person (A5) M5. Avoid unexpected static or moving obstacles / persons (A4,A5,A10) M6. Turn on radio / TV /cassette player (A3) M7. Operate appliance (by communicating with smart environment) (A3,A9) M8. Show feelings (A7)</p>	<ul style="list-style-type: none"> - feasible if payload is <300 g - ALNavigation - ALVisionRecognition, ALCloseObjectDetection, ALNavigation - ALMotion - ALAudioPlayer For external devices, It could be achieved with a specific communication protocol - It could be achieved with a specific communication protocol - ALLeds, ALRobotPosture, ALAnimationPlayer
<p>Left: Robot perceptual capabilities required Right: Corresponding Pepper API (if any)</p>	<p>P1. Locate persons (distance and position) (A1,A5) P2. Recognize emotions (A1) P3. Recognize actions (A6,A7,A10) P4. Recognize persons / faces (A1) P5. Recognize obstacles / uneven ground (A4,A5,A10) P6. Recognize/ Locate items (A4) P7. Retrieve / store information (A1,A2,A6,A7,A9) P8. Keep track of time (A2)</p>	<ul style="list-style-type: none"> - ALPeoplePerception - ALMood - no dedicated module, it could be achieved with external libraries - ALFaceDetection - ALLaser, ALSonar - ALVisionRecognition - ALMemory - no dedicated module, it could be achieved with different solutions
<p>Left: Robot verbal capabilities involved Right: Corresponding Pepper API (if any)</p>	<p>V1. Ask Yes/ No questions (A1) V2. Ask multiple choice questions (A1,A8) V3. Suggest / remind (A2,A6,A7,A8) V4. Context dependent chat (A6,A9) V5. Encourage/ praise (A6,A9) V6. Place a phone call (A9)</p>	<ul style="list-style-type: none"> - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech, ALTabletService - ALDialog, ALTabletService, or It

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

6.4 MR YAMADA - PRE LUNCH ROUTINE, PRAY



Scenario name	Mr Yamada - Pre Lunch routine, Pray	
Time of the day	Pre-lunch time	
General Description	<p><....> After dressing Mr Y will change the water of a flower vase and pour the water into a small cup. Then he 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 his bedroom.</p> <p>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. He will lighten an incense and a candle, then ring a bell once. He will spend there a few minutes, sitting on the chair, with his hands close together and closed eyes.</p> <p>He thought of his sister in heaven and talked her about recent life then asked her to watch out for his safety.</p>	<p>1. Example of the portrait with a vase, an incense stick, a candle, a small cup, and a bell.</p> 
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	H1. Possibly assist the change the water of a vase and put the cup beside the portrait.	

informal) caregiver shall / can do in this scenario	<p>H2. Possibly assist to pour water into a small cup and put the cup in front of the portrait.</p> <p>H3. To lighten the incense and the candle should be done by Mr Y himself so it would be nice if the carer brings the boxes of the incense and the candle to him.</p> <p>H4. Assist with sitting on the chair</p> <p>H5. Tell the death anniversary of a family member if it is the day.</p> <p>H6. Keeping quiet during prayer</p>	
Cultural knowledge involved (top level concepts in the Cultural Knowledge hierarchy)	<p>C1. Japanese way of praying: a) To whom – the deceased b) How – the process /behaviour e.g sitting, closing eyes, putting hands together c) What – the objects used e.g incense, a cup, flower vase</p> <p>C2. Maintaining the designated praying area in the room</p>	
Which “qualitative” caregiver behavior is expected to be culturally dependent	<p>D1. Knowing the time of the day for praying</p> <p>D2. Knowing how long the person normally prays</p> <p>D3. Helping person’s position during praying</p> <p>D4. Maintaining Mr Y ‘s privacy and silence</p> <p>D5. Show respect for the customs and process of the prayer</p>	
Which behavior is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc.)	<p>E1. Move gently in the room</p> <p>E2. Speak softly whilst helping with preparation for prayer</p> <p>E3. Keep acceptable distance from Mr Y</p> <p>E4. Polite and soft tone of voice</p>	
<p>Left: What the robot shall / can do in this scenario</p> <p>Right: Alternative tasks</p>	<p>A1. Locate things as needed (cup, scented stick holder, box of scented sticks, matches) (M6,M9,P5,P6) [H]</p> <p>A2. Bring things as needed (cup, scented stick holder, box of scented stick, matches) (M2,M3,M6,M8,M9,P1,P5) [H]</p> <p>A3. Hold the vase while Mr Y pour water in it (M1,M2,M4,P1,P2,P6) [H]</p> <p>A4. Locate the portrait and put the cup beside the portrait (M1,M2,M3,M6,M8,M9,P5,P6) [H]</p> <p>A5. Show interest in Mr Y praying custom, by asking him about his religion, e.g. Names of Gods, why he uses scented sticks, how long he normally prays for, how many times a day, etc. (M10,P4,P8,V2,V4) [E]</p> <p>A6. Provide privacy, staying silent in the room during the prayer (M6,M7,P4) [E]</p>	<p>A1'+A2'. Tell Mr Y the positions of needed objects in the environment, knowing them a priori, or detecting them by using markers.</p> <p>A2''. Permanently attach a tray to the robot’s chest to bring objects</p> <p>A3'+A4'. Suggest Mr Y to pour water in the vase and to place the cup beside the portrait</p> <p>A8'. Remind Mr Y to be careful while sitting / standing</p>

	<p>A7. Suggest to pray for blessings for family members and close friends – birthday / wedding anniversaries / death anniversaries (P8,V3,V5,V6) [E]</p> <p>A8. Assist Mr Y to sit on the chair (M5,M8,P1,P2) [H]</p> <p>A9. Ask Mr Y if he is comfortable (P2,V1) [E]</p> <p>A10. Remind Mr Y to check that there are no flames (P7,V3) [E]</p> <p>A11. Ask Mr Y questions about his sister (M10,P3,V1,V2,V4) [E]</p>	
<p>Left: Robot motor capabilities required Right: Corresponding API or H for “hard”</p>	<p>M1. Coordinately move base/ arms/ hands (A3,A4)</p> <p>M2. Grasp objects (A2,A3,A4)</p> <p>M3. Carry lightweight items (A2,A4)</p> <p>M4. Carry heavyweight items (A3)</p> <p>M5. Support for equilibrium/standing/sitting (A8)</p> <p>M6. Navigate autonomously in the house (A1,A2,A4,A6)</p> <p>M7. Track moving objects / persons (A6)</p> <p>M8. Reach a target / person (A2,A4,A8)</p> <p>M9. Avoid unexpected static or moving obstacles / persons (A1,A2,A4)</p> <p>M10. Show feelings (A5,A11)</p>	<ul style="list-style-type: none"> - ALMotion - no dedicated module, it could be achieved with external libraries - feasible if payload is <300 g - not feasible - not feasible - ALNavigation - ALLandmarkDetection, ALColorBlobDetection, ALVisionRecognition, ALCloseObjectDetection - ALVisionRecognition, ALCloseObjectDetection, ALNavigation - ALMotion - ALLeds, ALRobotPosture, ALAnimationPlayer
<p>Left: Robot perceptual capabilities required Right: corresponding API or H for “hard”</p>	<p>P1. Locate persons (distance and position) (A2, A3,A8)</p> <p>P2. Recognize posture, gesture, movements (A3,A8,A9)</p> <p>P3. Recognize emotions (A11)</p> <p>P4. Recognize actions (A5,A6)</p> <p>P5. Recognize obstacles / uneven ground (A1,A2,A4)</p> <p>P6. Recognize/ Locate items (A1,A3,A4)</p> <p>P7. Recognize fire / flame (A10)</p>	<ul style="list-style-type: none"> - ALPeoplePerception - no dedicated module, it could be achieved with external libraries - ALMood - no dedicated module, it could be achieved with external libraries - ALLaser, ALSonar - ALVisionRecognition - not feasible, it could be achieved by communicating with the smart environment using a specific

	P8. Retrieve / store information (A5,A7)	protocol - ALMemory
Left: Robot verbal capabilities involved Right: corresponding API or H for "hard"	V1. Ask Yes / No questions (A9,A11) V2. Ask multiple choice questions (A5,A11) V3. Suggest / remind (A7,A10) V4. Context dependent chat (A5,A11) V5. Encourage/ praise (A7) V6. Report information (A7)	- ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech, ALTabletService - ALMemory, ALTextToSpeech, ALTabletService
Which "qualitative" robot behavior is expected to be culturally dependent	R1. Suggesting when it is the time of the day for praying R2. Waiting for the person to finish praying R3. Helping person's position during praying	
Which behavior is "quantitatively" different depending con culture (volume and tone of voice, distance, velocity, etc)	T1. Speaks with soft tone T2. Speaks in low volume T3. Walks in low speed T4. Stands not too close to Mr Y	

6.5 MR YAMADA - LUNCH ROUTINE, EATING


Scenario name	Mr Yamada - Lunch routine, Eating	
Time of the day	Lunch time	
General Description	<p><....> Mr Y eats lunch at a dining room on the first floor with other elderly. They have fixed schedule to have lunch. It is his role to bring wet towels¹ 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.</p> <p>Today's lunch² 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.</p> <p>After lunch is ready and everyone is seated, they say "Itadakimasu" 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".</p> <p>He enjoyed lunch with others.</p> <p>After everyone finished lunch, others will wash Japanese tea cups as their role. Mr Y gathers cups at her table and gives them to the person. He goes back to his room and takes his medicine.</p>	<p>1. Japanese wet towel</p>  <p>2. Typical lunch in Japan.</p> 
Functional areas of the house involved	<ul style="list-style-type: none"> F1. Dining room F2. Kitchen F3. Dining table F4. Own room 	
Relevant objects involved	<ul style="list-style-type: none"> O1. Wet towel O2. Tray O3. Cups O4. Medicine O5. Curtain 	
Relevant persons (in addition to user and caregiver)	<ul style="list-style-type: none"> B1. Carer B2. Other elderly people 	

What a human (formal or informal) caregiver shall / can do in this scenario	H1. Assist to go to the dining room H2. Assist to prepare wet towels 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 Mr Y to take his medicine H9. Open the curtains	
Cultural knowledge involved (top level concepts in the Cultural Knowledge hierarchy)	C1. Japanese way to start and finish lunch C2. Japanese tool of wet towel to eat lunch C3. Way of eating (together with others) C5. Way of serving (all on the tray) C6. Fixed menu is served	
Which “qualitative” caregiver behavior is expected to be culturally dependent	D1. Time of eating D2. Type of food D3. Type of tea preparation. D4. Serve the tray for all and wait for everyone seated. D5. Pay attention whether anyone need more tea D6. Check if he takes appropriate medicine or tell him if he forgets to do	
Which behavior is “quantitatively” different depending con culture (volume and tone of voice, distance, velocity, etc.)	E3. Polite and soft tone of voice E4. Unrushed walking and eating	
Left: What the robot shall / can do in this scenario Right: Alternative tasks	A1. Remind Mr Y that it is lunch time (P4,P7,P8,V3) [E] A2. Walk with Mr Y to the dining room and back to the room (M7,M9,P1,P5) [E] A3. Greet other elderly (M6,M9,M10,P1,P4,P5,V5) [E] A4. Locate objects as needed (towel, tray, cups, medicine) (M6,M9,P5,P6) [H] A5. Bring objects as needed (towel, tray, cups, medicine) (M2,M3,M6,M8,M9,P1,P5) H A6. Prepare a tray with food for Mr Y (M2,M3,P6,P7) [H] A7. Bring the tray to the table (M2,M4,M6,M8,M9,P1,P4,P5) [H]	A4'+A5'. Tell Mr Y the positions of needed objects in the environment, knowing them a priori, or detecting them by using markers. A6'. Help Mr Y to prepare a tray with food by suggesting the items to be taken and where they should be placed in the tray. A7'. Suggest Mr Y to bring the tray with food to the table A5''+A7''. Permanently attach a tray to

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

<p>Left: Robot verbal capabilities involved Right: Corresponding Pepper API (if any)</p>	<p>V1. Ask Yes/ No questions (A10,A11) V2. Ask multiple choice questions (A10,A11) V3. Suggest / remind (A1,A13) V4. Context dependent chat (A8,A9,A10) V5. Greet (A3) V6. Encourage/ praise (A8)</p>	<p>- ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - Aldialog, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech - ALDialog, ALTextToSpeech, ALTabletService</p>
<p>Which “qualitative” robot behavior is expected to be culturally dependent</p>	<p>R1. Showing awareness of lunch routines (before, during and after lunch) R2. Paying attention whether anyone need more tea R3. Check if Mr Y takes appropriate medicine or tell him if he forgets to do</p>	
<p>Which behavior is “quantitatively” different depending con culture (volume and tone of voice, distance, velocity, etc)</p>	<p>T1. Speaks with soft tone T2. Speaks in low volume T3. Patiently waits during eating and lunch routines</p>	

6.6 MR YAMADA - AFTER LUNCH ROUTINE, NAP, RECREATION AND MEDITATION


Scenario name	Mr Yamada - After Lunch routine, Nap, recreation and meditation	
Time of the day	Early afternoon	
General Description	<p><...> after his light lunch Mr Y goes back to his room and takes a nap for half an hour. He goes to his bed and closes his eyes. He falls asleep. After taking about 30 minutes sleep, he wakes up. Then he 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. Mr Y recounts the related events and tells all about his experience. Others also share the memories all together.</p> <p>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 books¹ and they chant a Buddhist sutra together.</p> <p>After finished chanting, they close their eyes and with their hands closed together they bow their head.</p>	<p>1. Sutra book</p> 
Functional areas of the house involved	<p>F1. Bedroom</p> <p>F2. Lounge</p>	
Relevant objects involved	<p>O1. Bed</p> <p>O2. Newspaper</p> <p>O3. Sutra book</p>	
Relevant persons (in addition to user and caregiver)	<p>B1. Carer</p> <p>B2. Monk</p>	
What a human (formal or informal) caregiver shall / can do in this scenario	<p>H1. Don't disturb his nap, but keep track of time</p> <p>H2. If he usually takes a nap for 30 minutes, make sure that he gently wakes up and don't let him stay in the chair for hours</p> <p>H3. Choose appropriate news in the newspaper</p> <p>H4. Read the news to all</p>	

	<ul style="list-style-type: none"> 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 involved (top level concepts in the Cultural Knowledge hierarchy)	<ul style="list-style-type: none"> C1. Cognitive training to recall memories C2. Japanese way to chant 	
Which “qualitative” caregiver behavior is expected to be culturally dependent	<ul style="list-style-type: none"> D1. Choose the topics that is appropriate for time and place and people. D2. Give all people the chance to talk D3. Touching not desirable for non-family members 	
Which behavior is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc.)	<ul style="list-style-type: none"> E1. Polite and soft tone, low volume of voice E2. Keep some distance for non-family members E3. Moving about in calm slow manner E4. Gestures are gentle and not too exaggerated E5. Personal space - Distance from Mr Y 	
Left: What the robot shall / can do in this scenario Right: Alternative tasks	<ul style="list-style-type: none"> A1. Walk towards Mr Y (M4,M5,M6,P1,P5,P6) [E] A2. Suggest Mr Y to take a nap and ask him if he would like to be woken up after 30 minutes (P3,V1,V3) [E] A3. Keep track of time and eventually gently wake up Mr Y (P4,P10,V4,V6) [E] A4. Ask Mr Y how he feels (P2,P3,V1,V2) [E] A5. Choose topics and news appropriate for Mr Y, by providing information using internet (P8,P9) [E] A6. Refer to Mr Y news and next events (V4,V7) [E] A7. Ask Mr Y about his past (M7,V1,V2,V4,V6) [E] 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] 	<p>A8'+A9'. Tell Mr Y the positions of needed objects in the environment, knowing them a priori, or detecting them by using markers.</p> <p>A9''. Permanently attach a tray to the robot’s chest to bring objects</p> <p>A11'. Suggest Mr Y and other elderly to place the books on a table.</p> <p>A13'. Provide general comments about religion</p>

	<p>A12. Provide privacy (M4,P4) [E]</p> <p>A13. Comment on Mr Y chanting and on his peaceful appearance after praying, asking him how he feels after praying (M7,P3,V2,V4) [H]</p>	
<p>Left: Robot motor capabilities required</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>M1. Coordinately move base/ arms/ hands (A11)</p> <p>M2. Grasp objects (A9,A11)</p> <p>M3. Carry lightweight items (A9,A11)</p> <p>M4. Navigate autonomously in the house (A1,A8,A9,A10,A11,A12)</p> <p>M5. Reach a target / person (A1,A9,A10,A11)</p> <p>M6. Avoid unexpected static or moving obstacles / persons (A1,A8,A9,A10,A11)</p> <p>M7. Show feelings (A7,A13)</p>	<p>- ALMotion</p> <p>- no dedicated module, it could be achieved with external libraries</p> <p>- feasible if payload is <300 g</p> <p>- ALNavigation</p> <p>- ALVisionRecognition, ALCloseObjectDetection, ALNavigation</p> <p>- ALMotion</p> <p>- ALLeds, ALRobotPosture, ALAnimationPlayer</p>
<p>Left: Robot perceptual capabilities required</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>P1. Locate persons (distance and position) (A1,A9,A10,A11)</p> <p>P2. Recognize posture, gesture, movements (A4)</p> <p>P3. Recognize emotions (A2,A4,A13)</p> <p>P4. Recognize actions (A3,A12)</p> <p>P5. Recognize persons / faces (A1,A10)</p> <p>P6. Recognize obstacles / uneven ground (A1,A8,A9,A10,A11)</p> <p>P7. Recognize/ Locate items (A8,A11)</p> <p>P8. Retrieve / store information (A5)</p> <p>P9. Use search engines for finding information (A5)</p> <p>P10. Keep track of time (A3)</p>	<p>- ALPeoplePerception</p> <p>- no dedicated module, it could be achieved with external libraries</p> <p>- ALMood</p> <p>- no dedicated module, it could be achieved with external libraries</p> <p>- ALFaceDetection</p> <p>- ALLaser, ALSonar</p> <p>- ALVisionRecognition</p> <p>- ALMemory</p> <p>- ALTabletService</p> <p>- no dedicated module, it could be achieved with different solutions</p>
<p>Left: Robot verbal capabilities involved</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>V1. Ask Yes/ No questions (A2,A4,A7)</p> <p>V2. Ask multiple choice questions (A4,A7,A13)</p>	<p>- ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService</p> <p>- ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService</p>

	<p>V3. Suggest / remind (A2)</p> <p>V4. Context dependent chat (A3,A6,A7,A13)</p> <p>V5. Greet (A10)</p> <p>V6. Encourage/ praise (A3,A7)</p> <p>V7. Report information (A6)</p>	<p>- ALDialog, ALTextToSpeech, ALTabletService</p> <p>- ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService</p> <p>- ALDialog, ALTextToSpeech</p> <p>- ALDialog, ALTextToSpeech, ALTabletService</p> <p>- ALMemory, ALTextToSpeech, ALTabletService</p>
Which "qualitative" robot behavior is expected to be culturally dependent	<p>R1. Choose the topics that is appropriate for time and place and people</p> <p>R2. Invite other people to interact with the robot</p> <p>R2. Do not touch people</p>	
Which behavior is "quantitatively" different depending con culture (volume and tone of voice, distance, velocity, etc)	<p>T1. Speaks with soft tone</p> <p>T2. Speaks in low volume</p> <p>T3. Walks in low speed</p> <p>T4. Stands not too close to Mr Y</p> <p>T5. Keeps acceptable distance from the visitor</p>	

6.7 MR YAMADA - AFTER LUNCH ROUTINE, EXERCISE AND AFTERNOON TEA


Scenario name	Mr Yamada -After Lunch routine, Exercise and afternoon tea	
Time of the day	Early afternoon	
General Description	<p><...> After napping for half hour Mr Y wakes up refreshed and looks for his slippers; he puts them on and goes down to the first floor. The physical therapist waits for him to help the training of activities of daily life. In the training session, helped by the therapist, he uses a ball to train the joints' range of motion. He then trains more, by raising himself up from the chair with the help of the therapist.</p> <p>After his nice exercise, it is time for some green tea. He washes his hands with soap and dries his hands with a towel. He likes to have his tea with some soft azuki-bean jelly¹ brought by his son in his last visit. Soft azuki-bean jelly needs to be cut because it is one block. He prepares a small plate and a pick, then uses a small plastic spatula and cuts two pieces of jelly. Then he takes care not to pour hot tea over his hands by mistake.</p>	<p>1. azuki-bean jelly with a pick</p> 
Functional areas of the house involved	<p>F1. Bedroom F2. Training room F3. Kitchen F4. Living room</p>	
Relevant objects involved	<p>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</p>	

	O12. Soft azuki-bean jelly	
Relevant persons (in addition to user and caregiver)	B1. Therapist	
What a human (formal or informal) caregiver shall / can do in this scenario	H1. Help him put the slippers on/OFF H2. Information about today's training H3. Encourage him to train H4. Pass the ball to use in the training H5. Accompany him to do the training H6. Give a towel to him 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 he liked the training session, what he thinks of the azuki bean jelly,...	
Cultural knowledge involved (top level concepts in the Cultural Knowledge hierarchy)	C1. Japanese way of making tea C2. Japanese sweets C3. Japanese tools to eat soft azuki-beans jelly C4. Japanese way to eat soft azuki-beans jelly	
Which "qualitative" caregiver behavior is expected to be culturally dependent	D1. Able to prepare Japanese tea D2. Motivating exercising as part of living a healthy life D3. Being compassionate to Mr Y during the training D4. Allow Mr Y to hold his arm for his safety D5. Know when to be close and when to keep your distance D6. Talk to Mr Y whilst drinking his tea D7. Ask Mr Y if he enjoyed his training session D8. Ask him if the azuki bean jelly was nice and fresh D9. Touching not desirable for non-family members	
Which behavior is "quantitatively" different depending on culture (volume and tone of voice, distance, velocity, etc.)	E1. Polite and soft tone, low volume of voice E2. Keep some distance for non-family members E3. Moving about in calm slow manner E4. Gestures are gentle and not too exaggerated	
Left: What the robot shall / can do in this scenario Right: Alternative tasks	A1. Locate things as needed (slippers, ball, towel, tea, azuki-bean jelly, plate, pick, spatula) (M5,M8,P5,P6) [H] A2. Bring things as needed (slippers, ball, towel, tea, azuki-	A1'+A2'. Tell Mr Y the positions of needed objects in the environment, knowing them a priori, or detecting them by

	<p>bean jelly, plate, pick, spatula) (M2,M3,M5,M7,M8,P1,P5) [H]</p> <p>A3. Provide information about today's training (P2,P4,P8,V5) [E]</p> <p>A4. Remind Mr Y to train (V2,V4) [E]</p> <p>A5. Accompany Mr Y to the physical therapist (M6,M8,P5) [H]</p> <p>A6. Greet the physical therapist (M1,P4,V3) [E]</p> <p>A7. Encourage Mr Y during training (P3,V4) [H/E]</p> <p>A8. Suggest having green tea with jelly. (P9,V1,V2) [E]</p> <p>A9. Remind Mr Y to be careful while pouring hot water and to switch off the heat (P3,P7,V2) [H]</p> <p>A10. Hold the plate while Mr Y prepare it (M2,M4,P6) [H]</p>	<p>using markers.</p> <p>A2''. Permanently attach a tray to the robot's chest to bring objects</p> <p>A5'. Lead Mr Y to the training room by walking ahead of him. (Assuming that the whole path is traversable for the robot).</p> <p>A7'. Provide general comments about training</p> <p>A9'. Remind Mr Y to switch off the heat after the tea (or switch off the heat by communicating with the smart environment).</p> <p>A10'. Hold the plate in place on the table, while Mr Y prepares it.</p>
<p>Left: Robot motor capabilities required Right: Corresponding Pepper API (if any)</p>	<p>M1. Coordinately move torso/ arms/ hands (A6)</p> <p>M2. Grasp objects (A2,A10)</p> <p>M3. Carry lightweight items (A2)</p> <p>M4. Carry heavyweight items (A10)</p> <p>M5. Navigate autonomously in the house (A1,A2)</p> <p>M6. Follow moving objects / persons (A5)</p> <p>M7. Reach a target / person (A2)</p> <p>M8. Avoid unexpected static or moving obstacles / persons (A1,A2,A5)</p>	<ul style="list-style-type: none"> - ALMotion - no dedicated module, it could be achieved with external libraries - feasible if payload is <300 g - not feasible - ALNavigation - ALVisionRecognition, ALCloseObjectDetection, ALNavigation - ALVisionRecognition, ALCloseObjectDetection, ALNavigation - ALMotion
<p>Left: Robot perceptual capabilities required Right: Corresponding Pepper API (if any)</p>	<p>P1. Locate persons (distance and position) (A2)</p> <p>P2. Recognize posture, gesture, movements (A3)</p> <p>P3. Recognize actions (A7,A9)</p> <p>P4. Recognize persons / faces (A3,A6)</p> <p>P5. Recognize obstacles / uneven ground (A1,A2,A5)</p> <p>P6. Recognize/ Locate items (A1,A10)</p> <p>P7. Recognize fire / flame (A9)</p>	<ul style="list-style-type: none"> - ALPeoplePerception - no dedicated module, it could be achieved with external libraries - no dedicated module, it could be achieved with external libraries - ALFaceDetection - ALLaser, ALSonar - ALVisionRecognition - no dedicated module, it could be

	<p>P8. Retrieve / store information (A3)</p> <p>P9. Keep track of time (A8)</p>	<p>achieved by communicating with the smart environment</p> <ul style="list-style-type: none"> - ALMemory - no dedicated module, it could be achieved with different solutions
<p>Left: Robot verbal capabilities involved</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>V1. Ask multiple choice questions (A8)</p> <p>V2. Suggest / remind (A4, A8,A9)</p> <p>V3. Greet (A6)</p> <p>V4. Encourage/ praise (A4,A7)</p> <p>V5. Report information (A3)</p>	<ul style="list-style-type: none"> - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech - ALDialog, ALTextToSpeech, ALTabletService - ALMemory, ALTextToSpeech, ALTabletService
<p>Which “qualitative” robot behavior is expected to be culturally dependent</p>	<p>R1. Motivating exercising as part of living a healthy life</p> <p>R2. Being compassionate to Mr Y during the training</p> <p>R3. Showing interest in Mr Y training session</p> <p>R4. Showing interest in the azuki bean jelly</p>	
<p>Which behavior is “quantitatively” different depending con culture (volume and tone of voice, distance, velocity, etc)</p>	<p>T1. Speaks with soft tone</p> <p>T2. Speaks in low volume</p> <p>T3. Walks in low speed</p> <p>T4. Keeps acceptable distance from Mr Y, unless needed</p> <p>T5. Not too many gestures</p>	

6.8 MR YAMADA - AFTER LUNCH ROUTINE, SOCIAL ACTIVITIES (DRINKING TEA, VISITORS, TALKING)

Scenario name	Mr Yamada - After lunch routine, Social activities (drinking tea, visitors, talking)	
Time of the day	Afternoon	
General Description	<p><....> Today Mr Y woke up with a little bit of cold. He calls his carer to help to ask his doctor to give his medicine¹.</p> <p>Mr Y asks his carer to close the door of his room to get dressed.</p> <p>After he dressed, the carer opened the door and told him that his friend Masaru has come to visit.</p> <p>Mr Y has hobbies such as playing Shogi games. They enjoy playing games and sometimes Masaru asks Mr Y to teach how to play it well.</p> <p>Today Mr Y teaches Masaru how to play Shikenbisha (Fourth file rock) because Masaru has just begun to play Shogi recently.</p> <p>Masaru brings some sweets to enjoy them with Mr Y. Mr Y thanks her and makes Japanese Gyokuro tea. He boils water and pours hot water into an empty pot; then pours the hot water out of the pot into cups to make them all warm enough. He puts some leaves of Gyokuro into a pot then pours the hot water of cups back to the pot and waits for two minutes.³ They enjoy tea and sweets and make a piece of decorative banner together.</p>	<p>1. The carer that has been interviewed says that Japanese elderly trust the doctors very much so always ask doctors to give some medicine or some advice.</p> <p>2. Shogi</p>  <p>3. 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.</p>
Functional areas of the house involved	<p>F1. Living room</p> <p>F2. Kitchen</p>	
Relevant objects involved	<p>O1. Door</p> <p>O2. Shogi</p> <p>O3. Gyokuro tea</p> <p>O4. Pot</p>	

	O5. Cups O6. Sweets	
Relevant persons (in addition to user and caregiver)	B1. Carer B2. Friend	
What a human (formal or informal) caregiver shall / can do in this scenario	H1. Open the door for visitor and greet appropriately H2. Welcome the visitor H3. (Friend) Respect his skills to play Shogi H4. (Friend) Help to take Shogi set from the shelf? H5. (Friend) Thank Mr Y for giving special tea H6. (Friend) Help make the tea H7. (Friend) Help in the kitchen by getting the cups, plates, sweets	
Cultural knowledge involved (top level concepts in the Cultural Knowledge hierarchy)	C1. Japanese way of making Gyokuro C2. Japanese sweets C3. Appropriate for friends and relatives to stop by without calling in advance 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” caregiver behavior is expected to be culturally dependent	D1. Proper way of greeting and hospitality D2. Properly addressing the visitor D3. Distance from visitor and non-involvement in discussion D4. Helping in the kitchen, knowing where things are kept if the visitor is close enough to Mr Y D5. Washes the cups and dishes D6. Touching not desirable for non-family members	
Which behavior is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc.)	E1. Polite and soft tone of voice E2. Keep some distance for non-family members E3. Move gently and with low velocity E4. Smile	
Left: What the robot shall / can do in this scenario Right: Alternative tasks	A1. Ask Mr Y how he is feeling and if he needs to call the doctor (P2,P4,V1,V2) [E] A2. Place a skype/phone call to the doctor, saying “please hold on” and then asking Mr Y to talk (P7,V5,V7) [E] A3. Ask Mr Y information about medicine and doctor’s advices and store them (V2,V3,P7) [E] A4. Open/close room doors for Mr Y / visitor	A2’. Suggest Mr Y to call the doctor A4’. Open/close door by connecting to the smart environment. A7’. Show the visitor where to hang coat A10’+A11’. Tell Mr Y the positions of needed objects in the environment, knowing them a priori, or detecting them by using markers.

	<p>(M6,M8,P6) [H]</p> <p>A5. Greet appropriately the visitor (M5,M6,M7,P1,P4,P5,V4) [E]</p> <p>A6. Welcome the visitor (M9,V3) [E]</p> <p>A7. Take and hang visitor's coat (M1,M2,M3,M6,P1,P6) [H]</p> <p>A8. Tell Mr Y that his friend just came to visit him (M5,M6,M7,P1,P5,V6) [E]</p> <p>A9. Provide privacy to Mr Y and friend (M5,P3) [E]</p> <p>A10. Locate things as needed (Shogi, tea, pot, cups, sweets) (M5,M7,P5,P6) [H]</p> <p>A11. Bring things as needed (Shogi, tea, pot, cups, sweets) (M2,M3,M5,M6,M7,P1,P5) [H]</p> <p>A12. Prepare and bring a tray with tea and sweets (M1,M2,M4,M5,M6,M7,P1,P5,P6) [H]</p> <p>A13. Show interest and ask questions on Mr Y Shogi play (M9,P7,P8,V1,V2,V3) [E]</p> <p>A14. Congratulate with Mr Y for his Shogi skills (V3,V5) [H]</p>	<p>A12'. Locate and indicate objects needed for preparing the tray, knowing their position in the environment, or using markers. Then suggest Mr Y to bring the tray with food to the table</p> <p>A11''+A12''. Permanently attach a tray to the robot's chest to bring objects</p> <p>A14'. Provide general comments about Origami.</p>
<p>Left: Robot motor capabilities required</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>M1. Coordinately move base/ arms/ hands (A7,A12)</p> <p>M2. Grasp objects (A7,A11,A12)</p> <p>M3. Carry lightweight items (A7,A11)</p> <p>M4. Carry heavyweight items (A12)</p> <p>M5. Navigate autonomously in the house (A5,A8,A9,A10,A11,A12)</p> <p>M6. Reach a target / person (A4,A5,A7,A8,A11,A12)</p> <p>M7. Avoid unexpected static or moving obstacles / persons (A5,A8,A10,A11,A12)</p> <p>M8. Open doors / windows (by communicating with smart environment) (A4)</p> <p>M9. Show feelings (A6,A13)</p>	<ul style="list-style-type: none"> - ALMotion - no dedicated module, it could be achieved with external libraries - feasible if payload is <300 g - not feasible - ALNavigation - ALVisionRecognition, ALCloseObjectDetection, ALNavigation - ALMotion - It could be achieved with a specific communication protocol - ALLeds, ALRobotPosture, ALAnimationPlayer
<p>Left: Robot perceptual capabilities required</p>	<p>P1. Locate persons (distance and position) (A5,A7,A8,A11,A12)</p>	<ul style="list-style-type: none"> - ALPeoplePerception

<p>Right: Corresponding Pepper API (if any)</p>	<p>P2. Recognize emotions (A1) P3. Recognize actions (A9) P4. Recognize persons / faces (A1,A5) P5. Recognize obstacles / uneven ground (A5,A8,A10,A11,A12) P6. Recognize/ Locate items (A4,A7,A10,A12) P7. Retrieve / store information (A2,A3,A13) Recognize dialogue context (A13)</p>	<ul style="list-style-type: none"> - ALMood - no dedicated module, it could be achieved with external libraries - ALFaceDetection - ALLaser, ALSonar - ALVisionRecognition - ALMemory - ALSpeechRecognition
<p>Left: Robot verbal capabilities involved Right: Corresponding Pepper API (if any)</p>	<p>V1. Ask Yes/ No questions (A1,A13) V2. Ask multiple choice questions (A1,A3,A13) V3. Context dependent chat (A3,A6,A13,A14) V4. Greet (A5) V5. Encourage/ praise (A2,A14) V6. Report information (A8) V7. Place a phone call (A2)</p>	<ul style="list-style-type: none"> - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech - ALDialog, ALTextToSpeech, ALTabletService - ALMemory, ALTextToSpeech, ALTabletService - ALTabletService, or a specific communication protocol
<p>Which “qualitative” robot behavior is expected to be culturally dependent</p>	<p>R1. Proper way of greeting and hospitality R2. Respecting the relationship between Mr Y and visitor R3. Non-involvement in discussion with the visitor R4. Being ready to help during tea preparation</p>	
<p>Which behavior is “quantitatively” different depending con culture (volume and tone of voice, distance, velocity, etc)</p>	<p>T1. Speaks with soft tone T2. Speaks in low volume T3. Stands not too close to Mr Y T4. Keeps acceptable distance from the visitor T5. Walks in low speed</p>	

6.9 MR YAMADA - AFTER LUNCH ROUTINE, SON'S FAMILY, SOCIAL ACTIVITY

Scenario name	Mr Yamada - After Lunch routine, Son's family, social activity	
Time of the day	Late afternoon	
General Description	<p><...> It is late afternoon now and the carer reminds Mr Y that his son and his family will be arriving soon at the care house to visit him. He goes to the entrance with the carer and welcomes all there. His son thanks the carer then and says "Grandfather¹, how are you?". He smiles and replies "I'm fine, thank you everybody for coming all the way". They take off their shoes at the entrance³, leave them in the shoe box and put the guests' slippers on .</p> <p>They go to the lounge and the carer tells them he/she will leave and come back after one hour. Mr Y and his son's family sit on the sofa close together. They bring Mr Y's some of her favourite sweets and tea. They start talking about his son's family's day. Mr Y asks grandchildren about school days. His son's wife asks Mr Y about what he did since they last visited. His grandchildren show him some of the latest photos on the smartphone. He brings his glasses. They talk, and laugh. Then they take a selfie together.</p> <p>Before they leave his son's wife helps him put his coat because he will go to the entrance to see them off. His son tells him, that keeping exercising is good for him.</p> <p>He asks his son when he will visit her again and he reminds him that next week is Hinamatsuri⁴ so he will be coming the day before Hinamatsuri to take him so that he can celebrate it with the family.</p> <p>They have to go now and they say goodbye.</p>	<ol style="list-style-type: none"> 1. Japanese call family member by a role from the perspective of the youngest generation (in this case, his grandchildren), not name. 2. Greetings 3. Entering the house 4. Japanese festival for girls on 3rd March. One of his children is a girl.
Functional areas of the house involved	<p>F1. Entrance of the care house</p> <p>F2. Conversation Lounge</p>	
Relevant objects involved	<p>O1. Slippers for the guests</p>	



	<ul style="list-style-type: none"> O2. Shoe box O3. Sofa O4. Sweets and tea O5. Reading glasses O6. Coat O7. Coat stand O8. Smartphone
Relevant persons (in addition to user and caregiver)	<ul style="list-style-type: none"> B1. The carer B2. Son and his family(informal carer)
What a human (formal or informal) caregiver shall / can do in this scenario	<ul style="list-style-type: none"> H1. Prepare the slippers for son's family H2. Encourage her to go for walk H3. Help him put on her coat H4. Provide some privacy to Mr Y 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 involved (top level concepts in the Cultural Knowledge hierarchy)	<ul style="list-style-type: none"> C1. Greeting customs C2. Level of communication and detail of exchange of information C3. Son /parent relationship in Japanese culture C4. Use of words in Japan C5. Expectation that families celebrate festivals together C6. Japanese festival and preparation
Which "qualitative" caregiver behavior is expected to be culturally dependent	<ul style="list-style-type: none"> D1. Way of greeting with non-family members D2. involvement in discussion by non-family D3. (Grand)Father –son way of greeting, talking D4. Expression of compassion between father-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 "quantitatively" different depending on culture (volume and tone of voice,	<ul style="list-style-type: none"> E1. Polite and soft tone, low volume of voice E2. Keep some distance for non-family members E3. Moving about in calm slow manner

distance, velocity, etc.)	E4. Gestures are gentle and not too exaggerated	
<p>Left: What the robot shall / can do in this scenario</p> <p>Right: Alternative tasks</p>	<p>A1. Move to the entrance with Mr Y (M8,M10,M11,P1,P7) [E]</p> <p>A2. Welcome the visitors (M1,P5,V5) [E]</p> <p>A3. Ask son and family to put the shoes in the shoe box (V2,V3) [E]</p> <p>A4. Locate things as needed (slippers, sweets, tea, reading glasses) (M6,M10,P6,P7) [H]</p> <p>A5. Bring things as needed (slippers, sweets, tea, reading glasses) (M3,M4,M6,M9,M10,P1,P6) [H]</p> <p>A6. Provide privacy to Mr Y and family (M6,P4) [E]</p> <p>A7. Ask Mr Y and family if they want something to drink (P4,P9,V1,V2) [E]</p> <p>A8. Prepare and bring a tray with sweets and tea (M3,M4,M5,M6,M9,M10,P1,P6,P7) [H]</p> <p>A9. Take photos of Mr Y and family (M7,P10) [E]</p> <p>A10. Encourage Mr Y to go for a walk (P2,V3,V6) [E]</p> <p>A11. Help Mr Y to put the coat on (M2,M3,M4,M9,P1,P2,P7) [H]</p> <p>A12. Switch on and off lights (by connecting to the smart environment) (M12,P4) [E]</p> <p>A13. Stay back at the house (M6) [E]</p> <p>A14. Say goodbye to Mr Y son and his family (reply to the son's goodbye) (M1,M9,P4,P5) [E]</p> <p>A15. Ask Mr Y how he felt about his son's visit (P3,V4) [E]</p> <p>A16. Remind Mr Y that the son's family will be coming the day before Hinamatsuri (M13,P8,V3,V4,V7) [E]</p> <p>A17. Ask the son the time of next visit (or to enter it via the touch screen) (V1,V2,V4) [E]</p>	<p>A4'+A5'. Tell Mr Y the positions of needed objects in the environment, knowing them a priori, or detecting them by using markers.</p> <p>A8'. Locate and indicate objects needed for preparing the tray, knowing their position in the environment, or using markers Then suggest Mr Y to bring the tray with food to the table</p> <p>A5''+A8''. Permanently attach a tray to the robot's chest to bring objects</p> <p>A11'. Bring a hanger (on wheels) close to Mr Y, and then bring it back to its place again.</p> <p>A12'. Remind Mr Y to switch on / off the lights</p>
<p>Left: Robot motor capabilities required</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>M1. Coordinately move torso/ arms/ hands (A2,A14)</p> <p>M2. Coordinately move base/ arms/ hands (A11)</p> <p>M3. Grasp objects (A5,A8,A11)</p> <p>M4. Carry lightweight items (A5,A8,A11)</p> <p>M5. Carry heavyweight items (A8)</p> <p>M6. Navigate autonomously in the house</p>	<p>- ALMotion</p> <p>- ALMotion</p> <p>- no dedicated module, it could be achieved with external libraries</p> <p>- feasible if payload is <300 g</p> <p>- not feasible</p> <p>- ALNavigation</p>

	<p>(A4,A5,A6,A8,A13)</p> <p>M7. Track moving objects / persons (A9)</p> <p>M8. Follow moving objects / persons (A1)</p> <p>M9. Reach a target / person (A5,A8,A11,A14)</p> <p>M10. Avoid unexpected static or moving obstacles / persons (A1,A4,A5,A8)</p> <p>M11. Open doors / windows (by communicating with smart environment) (A1)</p> <p>M12. Operate appliance (by communicating with smart environment) (A12)</p> <p>M13. Show feelings (A16)</p>	<ul style="list-style-type: none"> - ALLandmarkDetection, ALColorBlobDetection, ALVisionRecognition, ALCloseObjectDetection - ALVisionRecognition, ALCloseObjectDetection, ALNavigation - ALVisionRecognition, ALCloseObjectDetection, ALNavigation - ALMotion - It could be achieved with a specific communication protocol - It could be achieved with a specific communication protocol - ALLeds, ALRobotPosture, ALAnimationPlayer
<p>Left: Robot perceptual capabilities required</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>P1. Locate persons (distance and position) (A1,A5,A8,A11)</p> <p>P2. Recognize posture, gesture, movements (A10,A11)</p> <p>P3. Recognize emotions (A15)</p> <p>P4. Recognize actions (A6,A7,A12,A14)</p> <p>P5. Recognize persons / faces (A2,A14)</p> <p>P6. Recognize obstacles / uneven ground (A4,A5,A8)</p> <p>P7. Recognize/ Locate items (A1,A4,A8,A11)</p> <p>P8. Retrieve / store information (A16)</p> <p>P9. Recognize dialogue context (A7)</p> <p>P10. Take pictures (A9)</p>	<ul style="list-style-type: none"> - ALPeoplePerception - no dedicated module, it could be achieved with external libraries - ALMood - no dedicated module, it could be achieved with external libraries - ALFaceDetection - ALLaser, ALSonar - ALVisionRecognition - ALMemory - ALSpeechRecognition - ALPhotoCapture
<p>Left: Robot verbal capabilities involved</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>V1. Ask Yes/ No questions (A7,A17)</p> <p>V2. Ask multiple choice question (A3,A7,A15,A17)</p> <p>V3. Suggest / remind (A3,A10,A16)</p>	<ul style="list-style-type: none"> - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech, ALTabletService

	<p>V4. Context dependent chat (A15,A16,A17)</p> <p>V5. Greet (A2,A14)</p> <p>V6. Encourage/ praise (A10)</p> <p>V7. Report information (A16)</p>	<p>- ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService</p> <p>- ALDialog, ALTextToSpeech</p> <p>- ALDialog, ALTextToSpeech, ALTabletService</p> <p>- ALMemory, ALTextToSpeech, ALTabletService</p>
<p>Which “qualitative” robot behavior is expected to be culturally dependent</p>	<p>R1. Way of greeting with non-family members</p> <p>R2. Invite other people to interact with the robot</p> <p>R3. Way of greeting and talking between mother and son</p> <p>R4. Communicating using indirect questions</p> <p>R5. Do not touch people</p>	
<p>Which behavior is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc)</p>	<p>T1. Speaks with soft tone</p> <p>T2. Speaks in low volume</p> <p>T3. Walks in low speed</p> <p>T4. Stands not too close to Mr Y</p> <p>T5. Keeps acceptable distance from the visitor</p>	

6.10 MR YAMADA - PREPARING FOR DINNER, DINNER PLANNING

Scenario name	Mr Yamada - Preparing for dinner, Dinner planning	
Time of the day	Pre-dinner time	
General Description	<p><...> On Sunday the care center has Setsubun festival that celebrates the coming of spring.¹</p> <p>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 for elderly to eat it without cutting, they eat pieces of it orienting their faces to the blessed direction of the year.</p> <p>Mr 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)³ to play a role of devil. They all go 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.</p> <p>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.</p>	<p>1. Setsubun is 3rd Feb and means to divide seasons (winter <-> spring).</p> <p>2. Soy beans and Ehomaki. Japanese usually eat Ehomaki without cutting, orienting their face to the blessed direction that is different from every last year.</p>  <p>3. Masks and beans for Mamemaki. Oni = devil, soto = out, Fuku = blessed, uchi = inside.</p> 
Functional areas of the house involved	F1. Kitchen F2. Garden F3. Dining Room	
Relevant objects involved	O1. Bag of Soybean	

	O2. Plate O3. Mask of a devil O2. Ehomaki	
Relevant persons (in addition to user and caregiver)	B1. Carer B2. Other elderly	
What a human (formal or informal) caregiver shall / can do in this scenario	H1. Ask to help open the bags of soy beans H2. Put some beans into plates 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 they eat Ehomaki	
Cultural knowledge involved (top level concepts in the Cultural Knowledge hierarchy)	C1. Japanese festival of Setsubun C2. Japanese way to celebrate coming spring C3. Knowledge on how to do Mamemaki C4. Knowledge on how to eat Ehomaki	
Which “qualitative” caregiver behavior is expected to be culturally dependent	D1. Planning of scattering the beans D2. Awareness about who should be the devil	
Which behavior is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc.)	E1. Polite and soft tone, low volume of voice E2. Moving about in calm slow manner E3. Gestures are gentle and not too exaggerated	
Left: What the robot shall / can do in this scenario Right: Alternative tasks	A1. Remind Mr Y that on Sunday the care center will celebrate Sestubun festival (P5,P8,V3) [E] A2. Ask Mr Y information about Setstubun, Mamemaki and Ehomaki (P3,V1,V2,V4) [E] A3. Encourage Mr Y to help in preparing soybean plates (M9,P8,V4,V6) [E] A4. Locate things as needed (soybeans, plates, mask, ehomaki, towel) (M5,M8,P6,P7) [H] A5. Bring things as needed (soybeans, plates, mask, ehomaki,	A4'+A5'. Tell Mr Y the positions of needed objects in the environment, knowing them a priori, or detecting them by using markers. A3'+A6'. Encourage Mr Y to help in preparing soybean plates A7'. Encourage all elderly to collect their plates A9'+A10'. Play the role of the devil,

	<p>towel) (M2,M3,M4,M7,M8,P1,P6) [H]</p> <p>A6. Hold a plate while Mrs Y put beans on it (M1,M2,M3,M6,P1,P2,P4) [H]</p> <p>A7. Deliver plates to all elderly (M3,M5,M7,M8,M9,P1,P6,V5) [H]</p> <p>A8. Suggest Mr Y to place the devil's mask on robot's face (P8,V3,V6) [E]</p> <p>A9. Move with Mr Y to the garden (and then back to the care center) (M6,M8,P1,P6) [H]</p> <p>A10. Play the role of the devil, trying to run away from the soybeans (M5,M8,M9,P3,P4,P6,P9,V4) [H]</p> <p>A11. Remind Mr Y to wash his hands (P8,V3) [E]</p> <p>A12. Prepare a tray with ehomaki (M2,M3,P7)[H]</p> <p>A13. Carry a tray with ehomaki to the table (M1,M4,M5,M7,M8,P1,P6) [H]</p> <p>A14. Suggest Mr Y to think about the wish she will make eating Ehomaki (M9,P3,P8,V3,V4,V6) [E]</p> <p>A15. Tell Mr Y what is the blessed direction this year (P4,P8,V3) [E]</p>	<p>but inside the home, running away from any person.</p> <p>A12'. Help Mr Y to prepare a tray with ehomaki by providing advise.</p> <p>A13'. Suggest Mr Y to bring the tray to the table.</p> <p>A5''+A13''. Permanently attach a tray to the robot's chest to bring objects</p>
<p>Left: Robot motor capabilities required</p> <p>Right: Corresponding Pepper API (if any)</p>	<p>M1. Coordinately move base/ arms/ hands (A6,A13)</p> <p>M2. Grasp objects (A5,A6,A12)</p> <p>M3. Carry lightweight items (A5,A6,A7,A12)</p> <p>M4. Carry heavyweight items (A13)</p> <p>M5. Navigate autonomously in the house (A4,A5,A7,A10,A13)</p> <p>M6. Follow moving objects / persons (A6,A9)</p> <p>M7. Reach a target / person (A5,A7,A13)</p> <p>M8. Avoid unexpected static or moving obstacles / persons (A4,A5,A7,A9,A10,A13)</p> <p>M9. Show feelings (A3,A7,A10,A14)</p>	<ul style="list-style-type: none"> - ALMotion - no dedicated module, it could be achieved with external libraries - feasible if payload is <300 g - not feasible - ALNavigation - ALVisionRecognition, ALCloseObjectDetection, ALNavigation - ALVisionRecognition, ALCloseObjectDetection, ALNavigation - ALMotion - ALLeds, ALRobotPosture, ALAnimationPlayer
Left: Robot perceptual	P1. Locate persons (distance and position) (A5,A6,A7,A9,A13)	- ALPeoplePerception

<p>capabilities required Right: Corresponding Pepper API (if any)</p>	<p>P2. Recognize posture, gesture, movements (A6) P3. Recognize emotions (A2,A10,A14) P4. Recognize actions (A6,A10,A15) P5. Recognize persons / faces (A1) P6. Recognize obstacles / uneven ground (A4,A5,A7,A9,A10,A13) P7. Recognize/ Locate items (A4,A12) P8. Retrieve / store information (A1,A3,A8,A11,A14,A15) P9. Keep track of time (A10)</p>	<ul style="list-style-type: none"> - no dedicated module, it could be achieved with external libraries - ALMood - no dedicated module, it could be achieved with external libraries - ALFaceDetection - ALLaser, ALSonar - ALVisionRecognition - ALMemory - no dedicated module, it could be achieved with different solutions
<p>Left: Robot verbal capabilities involved Right: Corresponding Pepper API (if any)</p>	<p>V1. Ask Yes/ No questions (A2) V2. Ask multiple choice questions (A2) V3. Suggest / remind (A1,A8,A11,A14,A15) V4. Context dependent chat (A2,A3,A10,A14) V5. Greet (A7) V6. Encourage/ praise (A3,A8,A14)</p>	<ul style="list-style-type: none"> - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech - ALDialog, ALTextToSpeech, ALTabletService
<p>Which “qualitative” robot behavior is expected to be culturally dependent</p>	<p>R1. Showing awareness of traditions and customs R2. Supporting caregivers in the playing the “devil” role</p>	
<p>Which behavior is “quantitatively” different depending con culture (volume and tone of voice, distance, velocity, etc)</p>	<p>T1. Speaks with soft tone T2. Speaks in low volume T3. Walks in low speed T4. Not too many gestures</p>	

7. MR AND MRS KHAN – SCRIPT

Mrs Khan, 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 (now 75 years old) 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 lived¹.

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 daughters². They are all married now but unfortunately none of them lives nearby.

Mr Khan is suffering from respiratory problems and sometimes has trouble breathing. He is always careful not to 'catch' a cold and because this he prefers to stay at home. However, that makes him sad because he liked going for shopping to the local shops and to the community center and socialize with his friends. 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. Mr and Mrs Khan continue to live at their old family home since none of their daughters³ are able to have them living with their families. As devoted Muslims they perform their prayer five times a day – following all the rituals such as ablution⁴- and they believe that Allah will protect them from all their problems and give them courage.

Dressing up in the morning is not hard for Mrs Khan. She 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 time⁷ they went shopping together. She will comb her hair nicely and wear a set of bangles⁸ that match the

1. *The extended family in collectivist societies will always try to help its members*
2. *Arranged marriages with the young people consent are common. Marrying within the family is also common. It is also common to consult the Imam.*
3. *Daughters often move in or near the in-laws*
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.*
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. Pajama kurtas are also made for men. Topi is a special cap worn by Muslim males*



colour of her salwar kameez. She will choose a nice warm woollen shawl and she is ready. Mr Khan usually likes to wear a simple grey or white pajama kurta and his topi⁶.

It is early afternoon and their good friend Rashida along with her cousin Aysha, come over for a short visit. Rashida and Aysha leave their shoes outside⁹; they come in, hug and say As-Salamu Alaykum¹⁰. They start speaking in Punjabi¹¹. Mrs Khan will slowly go to the kitchen to bring out some snacks¹², 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 done¹³ such as finding suitable match, may be consulting the Imam and whether they should consult relatives in Punjab. They would like to hear Mr Khan's opinion to the matter. Rashida and Aysha respect his views as an older adult and a long-time friend. He also has a lot of experience, since he found good matches for his own daughters.

On Sunday Mr and Mrs K's daughter, son in-law and grand daughter will be visiting for dinner. They discuss about dinner. Mrs K wants to make chicken biryani¹⁴, their daughter's favourite dish but also lamb kebabs because their grand daughter likes them very much. She will need to get some pomegranate juice and some sweets as well, such as firni (baked rice pudding) or halwai^{15,16,17}. Mr Khan will call the local Indian or Pakistani grocery shop to get the halal meats, the juice and sweets. The owners are good friends so he asks for firni in nice clay pots¹⁸.

It is evening prayer time. Mrs Khan is wearing her dupatta over her head and shoulders and has taken her rings and bangles and necklace before doing her ablution. Mr Khan has similarly prepared himself for prayer, put on his Topi (skullcap) and now they have both laid their prayer mats on the floor facing Makkah^{19,20}. They start their prayer which will last about 5-7 minutes. They are surrounded by images of Makkah and Madinah and they believe that Allah will always be there to protect them and their family.

When they finish their prayer Mrs Khan phones her daughter to remind her that

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.

11. 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.

12. Meat snacks such as 'keema samosas' or 'aloo ki tikki' 'chicken/aloo pakoras'.

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.

14. Biryani is a very typical Indian Muslim dish

15. Typical Muslim sweets and the pomegranate is considered God's fruit.

16. Muslims do not eat pork or drink alcohol

17. Meat and poultry must be halal which is a special way to kill the animal

18. A way of cooking rice pudding.



19. Makkah, holy city

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

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.

occasionally wiped with the hands. Prayers always follow a set of specific movements and recited in Arabic.

7.1 MR AND MRS KHAN - MORNING ROUTINE, DRESSING

Scenario name	Mr and Mrs Khan - Morning routine, Dressing	
Time of the day	Morning	
General Description	<p><....> 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 time³ they went shopping together.</p> <p>She will comb her hair nicely and wear a set of bangles⁴ that match the colour of her salwar kameez. She will choose a nice warm woollen shawl and she is ready.</p> <p>Mr Khan likes to wear pajama kurtas⁶ which are very light and comfortable and also shirts with long sleeves and trousers. He mostly wears jutti⁷ at home and of course his favourite topi⁸.</p>	<ol style="list-style-type: none"> 1. Clothing and different ways of dressing. 2. 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. 3. Way of showing her love and the expectation that children help their elderly parents 4. 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. 5. Loose garments are worn in order not to reveal the woman’s figure thus is a way of maintain modesty. 6. Pajama kurtas for men 7. Jutti, traditional shoes <div style="display: flex; justify-content: space-around;">   </div> <ol style="list-style-type: none"> 8. Topi, head cap
Functional areas of the house involved	<ol style="list-style-type: none"> F1. Bedroom – Bed area F2. Bedroom – Wardrobe area F3. Bedroom – Drawers area F4. Bedroom - dressing table area 	
Relevant objects involved	<ol style="list-style-type: none"> O1. Clothing for men and women 	

	<p>O2. Jewellery (e.g. bangles)</p> <p>O3. Comb</p> <p>O4. Jutti</p> <p>O5. Topi</p>	
Relevant persons (in addition to user and caregiver)	B1. No-body	
What a human (formal or informal) caregiver shall / can do in this scenario	<p>H1. Knowing names of clothing items . Asks Mrs K if she needs help with dressing. Ask Mr Khan if he needs any help as well.</p> <p>H2. Help Mrs K to choose salwar kameez, recommend colour or one of her favourite ones.</p> <p>H3. Help her find the salwar's matching dupatta</p> <p>H4. Bring comb</p> <p>H5. Bring bangles.</p> <p>H6. Recommend to wear a warm shawl (colour and type)</p> <p>H7. Bring clothing for Mr Khan if needed.</p> <p>H8. Locate and bring jutti for Mr Khan</p> <p>H9. Bring topi for Mr Khan</p> <p>H10. Provide privacy</p>	
Cultural knowledge involved (top level concepts in the Cultural Knowledge hierarchy)	<p>C1. Maintaining traditional way of dressing</p> <p>C2. Understand the importance of modesty for Muslim women and men</p> <p>C3. Understand that the Muslim way of dressing depends on the country of origin and that they are a lot of variations.</p>	
Which "qualitative" caregiver behaviour is expected to be culturally dependent	<p>D1. Maintain a distance form Mr and Mrs K and ask permission to enter the room and offer help.</p> <p>D2. Praise politely and only if acceptable</p> <p>D3. Assist with dressing if Mr and Mrs K would like that</p> <p>D4. Turn away when Mr and Mrs K are changing</p>	
Which behaviour is "quantitatively" different depending con culture (volume and tone of voice, distance, velocity, etc.)	<p>E1. Polite and soft tone of voice</p> <p>E2. Keep distance</p> <p>E3. Move at normal speed</p>	
Left: What the robot shall / can do in this scenario Right: Alternative tasks	<p>A1. Locate objects if needed (clothes, jewels, comb, jutti, topi) (M5,M8,P5,P6) [H]</p> <p>A2. Bring objects if needed (clothes, jewels, comb, jutti, topi) (M2,M3,M4,M5,M6,M8,P1,P5) [H]</p>	A1'+A2'. Tell Mr and Mrs K the positions of needed objects in the environment, knowing them a priori, or detecting them by using markers.

	<p>A3. Suggest to Mrs Khan wearing one of the favourite salwar kameez (P4,P7,V1,V2,V3) [E]</p> <p>A4. Open wardrobe with clothes (M1,M2,M6,M7,M8,M9,P5,P6) [H]</p> <p>A5. Ask Mr and Mrs K if they need help while getting dressed (P2,P4,V1,V4) [E]</p> <p>A6. Help Mrs K wearing salwar tops, by holding it and /or Mr Khan to wear his kurta (M1,M2,M3,M6,M8,P1,P2,P5,P6) [H]</p> <p>A7. Switch on/off lights when asked (M10) [H]</p> <p>A8. Provide privacy to Mr and Mrs K (M5,P4) [E]</p> <p>A9. Show interest and ask information about Indian Muslim traditional dresses (M11,P7,V1,V2,V4) [E]</p> <p>A10. Make recommendation based on weather (warm shawl) (P7,P8,V3,V4,V5) [E]</p> <p>A11. Praise Mrs K for her look (M11,P3,V4,V5) [E]</p> <p>A12. Encourage Mrs K to comb her hair (M11,V4,V5) [E]</p>	<p>A2''. Permanently attach a tray to the robot's chest to bring objects</p> <p>A4'. Open the wardrobe, by controlling its sliding doors within the smart home</p> <p>A6'. Bring a hanger (on wheels) close to Mr and Mrs K, and then brings it back to its place again.</p> <p>A7'. Connect to automatic controls of lights.</p>
<p>Left: Robot motor capabilities required Right: Corresponding Pepper API (if any)</p>	<p>M1. Coordinately move base/ arms/ hands (A4,A6)</p> <p>M2. Grasp objects (A2,A4,A6)</p> <p>M3. Carry lightweight items (A2,A6)</p> <p>M4. Carry heavyweight items (A2)</p> <p>M5. Navigate autonomously in the house (A1,A2,A8)</p> <p>M6. Reach a target / person (A2,A4,A6)</p> <p>M7. Pull objects (A4)</p> <p>M8. Avoid unexpected static or moving obstacles / persons (A1,A2,A4,A6)</p> <p>M9. Open doors / windows (by communicating with smart environment) (A4)</p> <p>M10. Operate appliance (by communicating with smart environment) (A7)</p> <p>M11. Show feelings (A9,A11,A12)</p>	<ul style="list-style-type: none"> - ALMotion - no dedicated module, it could be achieved with external libraries - feasible if payload is <300 g - not feasible - ALNavigation - ALVisionRecognition, ALCloseObjectDetection, ALNavigation - no dedicated module, it could be achieved with external libraries - ALMotion - It could be achieved with a specific communication protocol - It could be achieved with a specific communication protocol - ALLeds, ALRobotPosture, ALAnimationPlayer
<p>Left: Robot perceptual</p>	<p>P1. Locate persons (distance and position) (A2,A6)</p>	<ul style="list-style-type: none"> - ALPeoplePerception

capabilities required Right: Corresponding Pepper API (if any)	<p>P2. Recognize posture, gesture, movements (A5,A6)</p> <p>P3. Recognize emotions (A11)</p> <p>P4. Recognize actions (A3,A5,A8)</p> <p>P5. Recognize obstacles / uneven ground (A1,A2,A4,A6)</p> <p>P6. Recognize/ Locate items (A1,A4,A6)</p> <p>P7. Retrieve / store information (A3,A9,A10)</p> <p>P8. Recognize weather/ temperature (A10)</p>	<ul style="list-style-type: none"> - no dedicated module, it could be achieved with external libraries - ALMood - no dedicated module, it could be achieved with external libraries - ALLaser, ALSonar - ALVisionRecognition - ALMemory - no dedicated module, it could be checked the broadcast on internet or by communicating with the smart environment
Left: Robot verbal capabilities involved Right: Corresponding Pepper API (if any)	<p>V1. Ask Yes/ No questions (A3,A5,A9)</p> <p>V2. Ask multiple choice questions (A3,A9)</p> <p>V3. Suggest / remind (A3,A10)</p> <p>V4. Context dependent chat (A5,A9,A10,A11,A12)</p> <p>V5. Encourage/ praise (A10,A11,A12)</p>	<ul style="list-style-type: none"> - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech, ALTabletService
Which “qualitative” robot behavior is expected to be culturally dependent	<p>R1. Turning away or leaving the room when Mr and Mrs K is changing/dressing</p> <p>R2. Enters the room after permission given</p> <p>R3. Exits the room when required by Mr and Mrs K</p> <p>R4. Behaving politely and respectfully</p> <p>R5. Provide privacy</p>	
Which behavior is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc)	<p>T1. Speaks with soft tone</p> <p>T2. Speaks with normal volume</p> <p>T3. Walks in normal speed</p> <p>T4. Keeps acceptable distance from Mr and Mrs K: stand close to Mr or Mrs K only when helping with dressing</p>	

7.2 MR AND MRS KHAN- AFTER LUNCH ROUTINE, SOCIAL ACTIVITIES (DRINKING TEA, VISITORS, TALKING)

Scenario name	Mr and Mrs Khan - After lunch routine, Social activities (drinking tea, visitors, talking)	
Time of the day	Early afternoon	
General Description	<p><....> It is early afternoon and their good friend Rashida along with her cousin Aysha, come over for a short visit.</p> <p>Rashida and Aysha leave their shoes outside⁰; they come in, hug and say As-Salamu Alaykum¹. They start speaking in Punjabi².</p> <p>Mrs Khan slowly goes to the kitchen to bring out some snacks³, 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 done⁴ such as finding suitable match, may be consulting the Imam and whether they should consult relatives in Punjab. They would like to hear Mr Khan's opinion to the matter. They respect his views as an older adult and a long-time friend . He also has a lot of experience, as he found good matches for his own daughters⁵.</p>	<ol style="list-style-type: none"> 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. 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 3rd most spoken language in the Indian sub-continent. 4. 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. Respect older adults' opinions and seek their advice.
Functional areas of the house involved	<p>F1. Living room</p> <p>F2. Kitchen – cabinets, refrigerator</p> <p>F3. Front door</p>	
Relevant objects involved	<p>O1. Door</p> <p>O2. Cups, plates, paper napkins</p> <p>O3. Packages of snacks</p>	
Relevant persons (in addition to user and caregiver)	<p>B1. Friend (Rashida)</p> <p>B2. Cousin (Aysha)</p>	

<p>What a human (formal or informal) caregiver shall / can do in this scenario</p>	<p>H1. Help make the tea H2. Open the door for visitors and greet appropriately 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 and food H5. Serve the tea and food H6. Informs Mr and Mrs K that will leave and return in 1 hour</p>	
<p>Cultural knowledge involved (top level concepts in the Cultural Knowledge hierarchy)</p>	<p>C1. Knowledge on how to host visitors C2. Knowledge of marriage arrangements C3. Customs related to greeting and entering the house C4. Knowledge about Indian Muslim snacks eaten in the afternoon C5. Knowledge regarding the language/s spoken in Punjab</p>	
<p>Which “qualitative” caregiver behavior is expected to be culturally dependent</p>	<p>D1. Greeting appropriately D2. Abstaining from becoming involved in the conversation between Mr and Mrs K and visitors D3. No touching</p>	
<p>Which behavior is “quantitatively” different depending con culture (volume and tone of voice, distance, velocity, etc.)</p>	<p>E1. Polite and normal tone of voice E2. Keep small level of physical distance E3. Normal speed of walking</p>	
<p>Left: What the robot shall / can do in this scenario Right: Alternative tasks</p>	<p>A1. Open the door for the visitors (M4,M5,M6,M8,P4) [H] A2. Greet the visitors, performing ‘adab’ greeting hand gesture and saying “As-Salamu Alaykum” (M1,M10,P1,P3,V4,V5) [E] A3. Ask the visitors to remove their shoes and leave them by the door (P2,P6,V3,V6) [E] A4. Guide the visitors to the living room and invite them to sit down (M4,M5,M6,P4,V3,V4,V6) [E] A5. Ask Mr and Mrs K if its help is needed (P2,V1,V2) [E] A6. Locate objects as needed (cups, plates, paper 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 Mr and Mrs K if they want it to entertain them with some Indian songs or music (P2,P6,V1) [E]</p>	<p>A1. Connect to the automatic doors of the smart environment A6'+A7'. Tell Mr and Mrs K the positions of needed objects in the environment, knowing them a priori, or detecting them by using markers. A7''. Permanently attach a tray to the robot’s chest to bring objects A9'. Reproduce the selected radio channel via the robot’s loudspeakers.</p>

	A9. In case, play some Indian music (M7,M9) [H] A10. Provide privacy (M4,M6,P2,P4) [E]	
Left: Robot motor capabilities required Right: Corresponding Pepper API (if any)	M1. Coordinately move base/ arms/ hands (A2) M2. Grasp objects (A7) M3. Carry lightweight items (A7) M4. Navigate autonomously in the house (A1,A4,A6,A7,A10) M5. Reach a target / person (A1,A4,A7) M6. Avoid unexpected static or moving obstacles / persons (A1,A4,A6,A7,A10) M7. Turn on radio / TV /cassette player (A9) M8. Open doors / windows (by communicating with smart environment) (A1) M9. Operate appliance (by communicating with smart environment) (A9) M10. Show feelings (A2)	- ALMotion - no dedicated module, it could be achieved with external libraries - feasible if payload is <300 g - ALNavigation - ALVisionRecognition, ALCloseObjectDetection, ALNavigation - ALMotion - ALAudioPlayer For external devices, It could be achieved with a specific communication protocol - It could be achieved with a specific communication protocol - It could be achieved with a specific communication protocol - ALLeds, ALRobotPosture, ALAnimationPlayer
Left: Robot perceptual capabilities required Right: Corresponding Pepper API (if any)	P1. Locate persons (distance and position) (A2,A7) P2. Recognize actions (A3,A5,A8,A10) P3. Recognize persons / faces (A2) P4. Recognize obstacles / uneven ground (A1,A4,A6,A7,A10) P5. Recognize/ Locate items (A6) P6. Retrieve / store information (A3,A8)	- ALPeoplePerception - no dedicated module, it could be achieved with external libraries - ALFaceDetection - ALLaser, ALSonar - ALVisionRecognition - ALMemory
Left: Robot verbal capabilities involved Right: Corresponding Pepper API (if any)	V1. Ask Yes/ No questions (A5,A8) V2. Ask multiple choice questions (A5) V3. Suggest / remind (A3,A4)	- ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech, ALTabletService

	<p>V4. Context dependent chat (A2,A4)</p> <p>V5. Greet (A2)</p> <p>V6. Encourage/ praise (A3,A4)</p>	<p>- ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService</p> <p>- ALDialog, ALTextToSpeech</p> <p>- ALDialog, ALTextToSpeech, ALTabletService</p>
Which “qualitative” robot behavior is expected to be culturally dependent	<p>R1. Friendly and appropriate greeting</p> <p>R2. Asks visitors if they would like some more tea or snacks</p> <p>R3. Asks if they are enjoying the tea and snacks</p> <p>R4. Asks if they wish it to remain or leave the room</p>	
Which behavior is “quantitatively” different depending con culture (volume and tone of voice, distance, velocity, etc)	<p>T1. Speaks with normal tone</p> <p>T2. Speaks in normal volume</p> <p>T3. Walks in normal speed</p> <p>T4. Keeps small distance from Mr and Mrs K</p> <p>T5. Keeps small distance from the visitor</p>	

7.3 MR AND MRS KHAN - PREPARING FOR DINNER, DINNER PLANNING

Scenario name	Mr & Mrs Khan - Preparing for dinner, Dinner planning	
Time of the day	Pre-dinner time	
General Description	<p><....> On Sunday Mr and Mrs K's daughter, son in-law and granddaughter will be visiting for dinner. They need to plan for dinner. Mrs Khan will make all the preparations for them. She wants to make chicken⁴ biryani, her daughter's favorite dish but also lamb^{3,4} kebabs because her granddaughter likes them very much. She will need to get some pomegranate juice and some sweets as well, such as firni (baked rice pudding) or halwai². Mr Khan will call the local Indian or Pakistani grocery shop to get the halal meats, the juice and sweets. The owners are good friends so he asks for firni in nice clay pots⁵.</p>	<ol style="list-style-type: none"> 1. Biryani is a very typical Indian Muslim dish 2. Typical Muslim sweets and the pomegranate is considered God's fruit. 3. Muslims do not eat pork or drink alcohol 4. Meat and poultry must be halal which is a special way to kill the animal 5. A way of cooking rice pudding. 6. The left hand is considered the dirty hand whilst the right is the clean hand
Functional areas of the house involved	<p>F1. Living room F2. kitchen</p>	
Relevant objects involved	<p>O1. Phone O2. Phone book/personal phone book O3. Cooking pots and cooking tools O4. Crockery and cutlery</p>	
Relevant persons (in addition to user and caregiver)	<p>P1. Store employee</p>	
What a human (formal or informal) caregiver shall / can do in this scenario	<p>H1. Remind them that they are having family over and they need to plan H2. Discuss with Mrs Khan 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/Pakistani shop H8. Help in case Mr Khan needs to find new phone numbers H9. Place the order</p>	
Cultural knowledge involved (top level concepts)	<p>C1. Indian Muslim kuzine and diet restrictions C2. Different Muslim Indian dishes and way of preparation</p>	

<p>in the Cultural Knowledge hierarchy)</p>	<p>C3. Knowing about Muslim dietary restrictions (not eating pork, eating halal meat) C4. Knowing religious festivals (Ramadan, Eid) and what is permitted to eat during these festivals, periods of fasting. C5. Indian/Pakistani stores that source Muslim products from India C6. Names of different dishes</p>	
<p>Which “qualitative” caregiver behavior is expected to be culturally dependent</p>	<p>D1. Planning of dinner D2. Help with cooking according to Mrs K’s instructions D3. Prepare the dining table with small water finger bowls D4. Use of right and left hand when cooking, serving food, eating⁶ D4. Speaking some words in Mrs K’s mother tongue (if carer is also Indian) D5. Speaking in friendly way to store keeper (If regular customer)</p>	
<p>Which behavior is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc.)</p>	<p>E1. Polite and soft tone, low volume of voice E2. Moving about in calm manner E3. Gestures are gentle and not too exaggerated</p>	
<p>Left: What the robot shall / can do in this scenario Right: Alternative tasks</p>	<p>A1. Remind Mr and Mrs K that on Sunday family will come for dinner (P8,V3) [E] A2. Recommend dishes, taking into account the dietary restrictions of Muslim religion (M12,P8,P9,V3,V5) [E] A3. Provide recipes (P8,P10,V4) [E] A4. Ask Mrs K if she needs help while cooking (P4,V1,V2) [E] A5. Walk with Mrs K as she goes through her cabinets and refrigerator (M6,M8,P1,P6) [H] A6. Ask Mr and Mrs K if they want it to make a shopping list and prepare it on the tablet (P4,P8,V1) [H] A7. Locate things as needed (phone, phone book, food, dishes, kitchen book) (M5,M8,P6,P7) [H] A8. Bring things as needed (phone, phone book, food, dishes, kitchen book) (M2,M3,M5,M7,M8,P1,P6) [H] A9. Ask Mr K if he needs any phone numbers (P9,V1,V5) [E] A10. Place a phone call, saying “please hold on” and then asking Mr K to talk (M11,P8,V7,V8) [H] A11. Open door to the store employee (M5,M7,M8,M10,P5,P6,P7,V5,V6) [H]</p>	<p>A5’+A6’. Knowing the recipe and needed ingredients (A3) the robot walk with Mrs K or Mr K and ask (Y/N) if ingredient X is available, making a list of the ones missing. A7’+A8’. Tell Mrs K or Mr K the positions of needed objects in the environment, knowing them a priori, or detecting them by using markers. A8’’. Permanently attach a tray to the robot’s chest to bring objects. A10’. Place a skype call to the shop A11’. Open the automatic door by connecting to the smart environment. A12’. Tell Mr and Mrs K that the store employee arrived A13’. Suggest Mrs K how to lay the</p>

	<p>A12. Help in carrying the shopping (M1,M3,M4,M5,M8,P2,P6,P7) [H] A13. Help with laying the table (M1,M2,M3,M5,M7,M8,P6,P7) [H] A14. Ask Mr and Mrs K if they want to be entertained with some Indian songs (P3,P4,V1,V2) [E] A15. In case, entertain Mrs K whilst cooking by playing her favourite songs (M9,M11,M12,P8) [E] A16. Ask Mr and Mrs K if the food tastes nice. Ask if they need help with cleaning the kitchen (P4,V1) [E] A17. Carry out dirty dishes after dinner (M2,M3,M5,M7,M8,P6,P7) [H]</p>	<p>table (i.e. using terms like “to the right”) A13’’. Provide general comments and suggestions about table preparation A15’. Connect to internet radio and let Mrs K or Mr K listen to her / his favorite music via the Pepper’s loudspeakers. A17’. Encourage Mrs K and/ or Mr K to carry out dirty dishes after dinner</p>
<p>Left: Robot motor capabilities required Right: Corresponding Pepper API (if any)</p>	<p>M1. Coordinately move base/ arms/ hands (A12,A13) M2. Grasp objects (A8,A13,A17) M3. Carry lightweight items (A8,A12,13,A17) M4. Carry heavyweight items (A12) M5. Navigate autonomously in the house (A7,A8,A11,A12,A13,A17) M6. Follow moving objects / persons (A5) M7. Reach a target / person (A8,A11,A13,A17) M8. Avoid unexpected static or moving obstacles / persons (A5,A7,A8,A11,A12,A13,A17) M9. Turn on radio / TV /cassette player (A15) M10. Open doors / windows (by communicating with smart environment) (A11) M11. Operate appliance (by communicating with smart environment) (A10,A15) M12. Show feelings (A2,A15)</p>	<ul style="list-style-type: none"> - ALMotion - no dedicated module, it could be achieved with external libraries - feasible if payload is <300 g - not feasible - ALNavigation - ALVisionRecognition, ALCloseObjectDetection, ALNavigation - ALVisionRecognition, ALCloseObjectDetection, ALNavigation - ALMotion - ALAudioPlayer <p>For external devices, It could be achieved with a specific communication protocol</p> <ul style="list-style-type: none"> - It could be achieved with a specific communication protocol - It could be achieved with a specific communication protocol - ALLeds, ALRobotPosture, ALAnimationPlayer

<p>Left: Robot perceptual capabilities required Right: Corresponding Pepper API (if any)</p>	<p>P1. Locate persons (distance and position) (A5,A8) P2. Recognize posture, gesture, movements (A12) P3. Recognize emotions (A14) P4. Recognize actions (A4,A6,A14,A16) P5. Recognize persons / faces (A11) P6. Recognize obstacles / uneven ground (A5,A7,A8,A11,A12,A13,A17) P7. Recognize/ Locate items (A7,A11,A12,A13,A17) P8. Retrieve / store information (A1,A2,A3,A6,A10,A15) P9. Recognize dialogue context (A2,A9) P10. Use search engines for finding information (A3)</p>	<ul style="list-style-type: none"> - ALPeoplePerception - no dedicated module, it could be achieved with external libraries - ALMood - no dedicated module, it could be achieved with external libraries - ALFaceDetection - ALLaser, ALSonar - ALVisionRecognition - ALMemory - ALSpeechRecognition - ALTabletService
<p>Left: Robot verbal capabilities involved Right: Corresponding Pepper API (if any)</p>	<p>V1. Ask Yes/ No questions (A4,A6,A9,A14,A16) V2. Ask multiple choice questions (A4,A14) V3. Suggest / remind (A1,A2) V4. List instructions (A3) V5. Context dependent chat (A2,A9,A11) V6. Greet (A11) V7. Encourage/ praise (A10) V8. Place a phone call (A10)</p>	<ul style="list-style-type: none"> - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALTextToSpeech - ALDialog, ALTextToSpeech, ALTabletService - ALTabletService, or it could be achieved with external libraries
<p>Which “qualitative” robot behavior is expected to be culturally dependent</p>	<p>R1. Sings to Mr and Mrs K R2. Keeps Mr and Mrs K company R3. Makes itself available to help Mr and Mrs K as needed R4. Encourages Mrs K by referring to how good the various dishes she is making look R5. If the weather is good encourages Mr K to walk to the local shop R6. No touching</p>	
<p>Which behavior is</p>	<p>T1. Speaks with soft tone</p>	

“quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc)	T2. Speaks in low volume T3. Walks at low speed T4. Stands not too close to Mr and / or Mrs K unless it is helping her or him with something T5. Not too many gestures
---	---

7.4 MR AND MRS KHAN - EVENING ROUTINE, PRAY

Scenario name	Mr & Mrs Khan - Evening routine, Pray	
Time of the day	Evening	
General Description	<p><....> It is evening prayer time¹. Mrs K is wearing her dupatta² and has taken her rings and bangles and necklace before doing her ablution³. Mr Khan has similarly prepared himself for prayer, put on his Topi (skullcap)² and now they have both laid their prayer mats on the floor facing Makkah^{4,5}. They start their prayer which will last about 5-7 minutes.</p> <p>They are surrounded by images of Makkah and Madinah and they believe that Allah will always be there to protect them and their family.</p> <p>When they finish, Mrs K phones their daughter to remind her that tomorrow afternoon she will need to accompany her to her doctor's appointment. Their daughter is well educated and works in a large pharmaceutical company. She feels more confident having her with her.</p>	<p>1. Adult Muslims should pray 5 times a day.</p> <p><i>Salat is the obligatory Muslim prayers, performed five times each day by Muslims. It is the second Pillar of Islam.</i></p> <p><i>Salat al-fajr: dawn, before sunrise</i></p> <p><i>Salat al-zuhr: midday, after the sun passes its highest</i></p> <p><i>Salat al-'asr: the late part of the afternoon</i></p> <p><i>Salat al-maghrib: just after sunset</i></p> <p><i>Salat al-'isha: between sunset and midnight</i></p> <p><i>All Muslims try to do this.</i></p> <p>2. 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. Men will wear a special cap called Topi.</p> <p>3. 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.</p> <p>4. Makkah, holy city</p> <p>5. 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</p>

		<i>wiped with the hands. Prayers always follow a set of specific movements and recited in Arabic.</i>
Functional areas of the house involved	F1. Bedroom F2. Bathroom	
Relevant objects involved	O1. Praying mat O2. Towels O3. Hijab O4. Topi O5. Prayer book/Quar'an O6. Ornaments O7. Phone	
Relevant persons (in addition to user and caregiver)	P1. No-one	
What a human (formal or informal) caregiver shall / can do in this scenario	H1. Bring Mrs Khan's dupatta if she is not wearing it (female carer) or Topi for Mr Khan H2. Bring the praying mats for both Mr and Mrs Khan H3. Place the mat on the floor (correct position/facing to Makkah) H4. Asking whether they need help with washing before prayer H5. Keeping quiet during prayer H6. Responding to the couple's needs during prayer e.g offer help if needed to sit on the floor H7. Provide privacy H8. Reminder to call their daughter H9. Call the daughter	
Cultural knowledge involved (top level concepts in the Cultural Knowledge hierarchy)	C1. Muslim way of praying : a) To whom - Allah b) How – the process /behaviour e.g washing before praying (ablution), sitting on lower legs on prayer mat , facing Makkah, movements during prayer, words 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 their life C4. Family expectations	
Which "qualitative" caregiver behaviour is expected to be culturally dependent	D1. (If carer non-Muslim) show interest in learning about Islam and customs during prayer D2. Knowing the times of the day for praying D3. Knowing how long the person normally prays D4. Helping person's position during praying	

	<p>D5. Maintaining Mr and Mrs K 's privacy and silence D6. Show respect for the customs and process of the prayer D7. Ask Mr and Mrs K how they feel after the prayer D8. Knowing the importance of family</p>	
<p>Which behaviour is “quantitatively” different depending on culture (volume and tone of voice, distance, velocity, etc.)</p>	<p>E1. Move gently in the room E2. Speak softly whilst helping with preparation for prayer E3. Keep acceptable distance from Mr and Mrs K E4. Polite and soft tone of voice E5. Speaking softly, ask Mr and Mrs K how they feel after the prayer</p>	
<p>Left: What the robot shall / can do in this scenario Right: Alternative tasks</p>	<p>A1. Show interest in Mr and Mrs K’ praying customs by asking them about their religion e.g how long they normally pray for, how many times a day, words reciting, etc (M9,P4,P5,P8,V2,V4) [E] A2. Indicate correct position for praying (facing to Makkah) (P2,P8,V7) [E] A3. Ask Mr and Mrs K if they need help with washing before praying (e.g., if she/he needs the towel) (P4,V1) [E] A4. Ask Mr and Mrs K if she/he needs anything or if she/he want it to leave the room (P4,V1,V2,V4) [E] A5. If in the room, provide privacy, observing Mr and Mrs K quietly during prayer (M5,M6,M8,P6) [E] A6. Assist Mr and Mrs K to stand or sit on the floor (M1,M4,M7,M8,P1,P2,P6) [H] A7. Give Mr and Mrs K time checks (P4,P9,V3,V7) [E] A8. Locate things as needed (prayer mat, dupatta, topi, towel, hijab, prayer book) (M5,M8,P6,P7) [H] A9. Bring things as needed (prayer mat, dupatta, topi, towel, hijab, prayer book) (M2,M3,M5,M7,M8,P1,P6) [H] A10. Ask Mr and Mrs K if she/he is comfortable or if she/he needs anything else to make them comfortable (P2,V1,V2) [E] A11. Ask Mr and Mrs K how they feel after praying and comment on their peaceful appearance after praying (M9,P3,V2,V4,V5) [H] A12. Bring Mr and Mrs K a glass of water to drink at the end of prayer (M2,M3,M4,M7,M8,P1,P4,P6,P7) [H] A13. Remind Mr and Mrs K to call their daughter (P8,P9,V3,V5)</p>	<p>A6’. Encourage Mr and Mrs K to stand or sit A8’+A9’. Tell Mr and Mrs K the positions of needed objects in the environment, knowing them a priori, or detecting them by using markers. A11’. Provide general comments about religion. A12’. Suggest Mr and Mrs K to drink a glass of water</p>

	[E] A14. Place a phone/skype call to the daughter, saying “Please hold on” and asking Mrs K to talk (P8,V4,V5,V6) [E]	
Left: Robot motor capabilities required Right: Corresponding Pepper API (if any)	M1. Coordinately move base/ arms/ hands (A6) M2. Grasp objects (A9,A12) M3. Carry lightweight items (A9,A12) M4. Support for equilibrium/standing/sitting (A6) M5. Navigate autonomously in the house (A5,A8,A9,A12) M6. Track moving objects / persons (A5) M7. Reach a target / person (A6,A9,A12) M8. Avoid unexpected static or moving obstacles / persons (A5,A6,A8,A9,A12) M9. Show feelings (A1,A11)	- ALMotion - no dedicated module, it could be achieved with external libraries - feasible if payload is <300 g - not feasible - ALNavigation - ALLandmarkDetection, ALColorBlobDetection, ALVisionRecognition, ALCloseObjectDetection - ALVisionRecognition, ALCloseObjectDetection, ALNavigation - ALMotion - ALLeds, ALRobotPosture, ALAnimationPlayer
Left: Robot perceptual capabilities required Right: Corresponding Pepper API (if any)	P1. Locate persons (distance and position) (A6,A9,A12) P2. Recognize posture, gesture, movements (A2,A6,A10) P3. Recognize emotions (A11) P4. Recognize actions (A1,A3,A4,A7,A12) P5. Recognize persons / faces (A1) P6. Recognize obstacles / uneven ground (A5,A6,A8,A9,A12) P7. Recognize/ Locate items (A8,A12) P8. Retrieve / store information (A1,A2,A13,A14) P9. Keep track of time (A7,A13)	- ALPeoplePerception - no dedicated module, it could be achieved with external libraries - ALMood - no dedicated module, it could be achieved with external libraries - AIFaceDetection - ALLaser, ALSonar - ALVisionRecognition - ALMemory - no dedicated module, it could be achieved with external libraries
Left: Robot verbal capabilities involved Right: Corresponding	V1. Ask Yes/ No questions (A3,A4,A10) V2. Ask multiple choice questions (A1,A4,A10,A11)	- ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService - ALDialog, ALSpeechRecognition,

Pepper API (if any)	<p>V3. Suggest / remind (A7,A13)</p> <p>V4. Context dependent chat (A1,A4,A11,A14)</p> <p>V5. Encourage/ praise (A11,A13,A14)</p> <p>V6. Place a phone call (A14)</p> <p>V7. Report information (A2,A7)</p>	<p>ALTextToSpeech, ALTabletService</p> <p>- ALDialog, ALTextToSpeech, ALTabletService</p> <p>- ALDialog, ALSpeechRecognition, ALTextToSpeech, ALTabletService</p> <p>- ALDialog, ALTextToSpeech, ALTabletService</p> <p>- ALTabletService, or it could be achieved with external libraries</p> <p>- ALMemory, ALTextToSpeech, ALTabletService</p>
Which “qualitative” robot behavior is expected to be culturally dependent	<p>R1. Show interest in learning about Islam and customs during prayer</p> <p>R2. Knowing the time of the day for praying</p> <p>R3. Knowing how long the person normally prays</p> <p>R4. Knowing that Mr and Mrs K needs to wash before prayer</p> <p>R5. Knowing that Mrs Khan needs to cover her head with the dupatta and Mr Khan with the Topi</p> <p>R6. Helping person’s position during praying</p> <p>R7. Maintaining Mr and Mrs K ’s privacy and silence</p> <p>R8. Show respect for the customs and process of the prayer</p> <p>R9. Knowing that Mrs K needs to connect with her daughter for next day’s appointment</p>	
Which behavior is “quantitatively” different depending con culture (volume and tone of voice, distance, velocity, etc)	<p>T1. Speaks with soft tone whilst helping with preparation for prayer</p> <p>T2. Walks with low speed</p> <p>T3. Keeps acceptable distance from Mr and Mrs K</p> <p>T4. Speaks with soft tone whilst asking how they feel after the prayer</p>	