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E-VITA – European-Japanese Virtual Coach for Smart Ageing

E-VITA (EU PROJECT NUMBER 101016453)

[Number and title of work-package] WP3 – AHA Coaching Contents & Programs

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Executive Summary

This deliverable presents practices with coaching machines. We go into detail about how dialogue encourages self-reflection and how quotes from a religious knowledge base can inspire people. In doing so, we address knowledge-based information provision and reflective conversations as two different types of conversations with coaching machines. We also highlight the unique potential of coaching machines, such as reoccurrence and otherness of conversation. Above all, we take user-led approach to coaching where the coaching machine provides impulses without prescribing solutions.

Overall, we concentrate on aging-related issues that affect people's subjective wellbeing on a daily basis. The topics that we address in this deliverable include death, spirituality, reminiscence, and motivation. We go back to anecdotal evidence we gathered in earlier deliverables to trace related practices. For each topic we highlight related anecdotes, theoretical background, and envisaged interactions with a coaching machine.

The concepts in this deliverable inform the design of coaching machines in the e-VITA project.

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Acronyms and Abbreviations

Acronym/Abbreviation	Explanation
D	Deliverable
WP	Work Package
RASA	Conversational AI software for building voice-based assistants

1 Introduction

Aging is an adaptive experience that involves change in different areas of life, such as social roles, capacities, or independent living. While social and emotional life changes with age, the fulfillment of psychological needs remains a constant source for wellbeing. People's subjective well-being is influenced by their perceptions of need fulfillment and meaning, which they find in intentional activities and everyday practices. Subjective wellbeing describes the self-reported satisfaction with general and specific areas of one's life.

When we introduce interactive technology into the life of older adults, we necessarily shape new practices. Ideally, the emerging technology-mediated practices should be perceived as meaningful by users. Designers can draw inspiration from successful practices to create meaningful technology-mediated practices. Such practice-oriented design approaches should not simply replicate existing practice, but rather seek out exemplary actions and unique technological opportunities. This ideal is prioritized by positive design and possibility-driven design. In e-VITA we chose this approach to design experiences with a coaching machine for active and healthy aging.

In the beginning of the project, we interviewed older adults about practices that they already engage in and perceive as meaningful. We reported the results from these interviews in an earlier deliverable (D3.1 Report on everyday practices that support subjective wellbeing). These findings served as an inspiration for us to conceptualize meaningful experiences with a coaching machine.

In this deliverable, we look at the potential of conversational agents to shape everyday practices that are conducive to the wellbeing of aging people. In the e-VITA project we develop a coaching machine for aging people that supports their individual development in later life. This coach is a technical machine (e.g., a robotic or digital being) that can have a spoken conversation in human language. So far, the familiar conversational practices of older adults are typically with human counterparts. For example, a chat on a family gathering or a casual phone call with their children. On the contrary, a conversation with a machine is different in the sense that there is no interpersonal relationship, emotion, or empathy. This allows to have new kinds of conversations with different qualities. A conversation with a machine could be particularly self-centered without consideration for the interlocutor. Or the conversation flow could be factual and structured compared to the rambling speech among humans. Consequently, we propose new practices with conversational machines that could be insightful, motivating, or meaningful for older users.

1.1 Objectives of the deliverable

In an earlier deliverable (D3.1) we reported the empirical findings from a series of interviews about the existing everyday practices that older adults engage in. This subsequent deliverable (D3.7) suggest new practices that older people could engage in with a coaching machine. Specifically, we describe practices that utilize the unique qualities of a conversational machine (e.g., unemotional, factual, non-judgmental). Further, we describe two types of everyday interactions: reflective conversations and knowledge-based information provision.

- **Reflective Conversations:** Talking out loud facilitates self-reflection and helps people think. To give an example, some programmers debug code by articulating a problem in spoken language to a rubber duck (rubber duck debugging). Consequently, conversations with a quasi-social other can be insightful regardless of reciprocity. Thus, we use reflective conversations to refer to practices with a coaching machine that generate insights in the sense that they make people

think. This can become a never-ending search for self-knowledge, but also make us aware of what is important to us. Here, the coach does not teach, but rather inquiries about people's views to help them in constructing their own knowledge. The otherness of robots also allows for conversations that underrepresented in human-human interaction and enables new form of self-disclosure.

- **Knowledge-based Information Provision:** There are many sources of knowledge that people refer to in everyday situations. This can be platitudes, but also profound lessons that are grounded in long-standing tradition and human experience. Specifically, this deliverable looks at ways to integrate cultural and religious knowledge into a coaching machine. This can be moral stories or even verses from the bible that the coaching devices recite. The user determines how this story should be understood and what it means.

This deliverable explores how technology can shape everyday practices that support the subjective wellbeing of aging people. We use anecdotes from the everyday life of older people as an inspiration to develop new practices that are meaningful and enabled through the use conversational machines. Our earlier findings already show examples of positive experiences, such as reminiscence, mastery, or spiritual growth. This helps us to understand why an experience is positive. Now, we propose technology-mediated practices that do not replicate existing ones, but rather use the strengths of technology to offer new experiences. For example, a conversational machine can memorize all hundreds of thousands of words in the bible and recite an appropriate verse for each occasion. Altogether, the experiences we describe in this deliverable could be conducive to the subjective wellbeing of older adults and complement more medical approaches. Coaching devices are envisioned to provide self-teaching media that support sensemaking without imposing formal instructions.

1.2 Overview of Contents

The following chapters conceptualize different experiences with a coaching machine. In chapter 2 we recap the practices that we identified earlier and describe how they inspire the development of a coaching machine. In chapter 3 we highlight reflective conversations that are relevant to everyday life and help to construct knowledge. In chapter 4 we discuss how knowledge-based interactions with a coaching machine can make existing knowledge available to older adults. For all technology-mediated practices we describe how they improve the subjective wellbeing and provide inputs for a technical implementation (e.g., dialogues, intents, knowledge base). In chapter 5 we sum up the implications for e-VITA, particularly regarding the ongoing re-design process of the e-VITA devices. Finally, we draw a conclusion in chapter 6 and link this to the future activities inside the e-VITA project.

2 Everyday Practices that Support Subjective Wellbeing

Older people adjust to new roles and challenges that come with age through positive developmental shifts (Charles and Carstensen 2010). This could be improved self-regulation, healthy relationships, or changing priorities. However, personal growth requires to learn from and act upon changing circumstances. Therefore, older people should have the opportunity to reflect upon life and identify small and large life projects that bring balance, joy and meaning in life (Åberg et al. 2021).

Our conversations with older adults revealed many aspects of aging, adaption, and meaning. Specifically, our previous report on everyday practices that support subjective wellbeing (D3.1) covers different areas of life that are relevant for older adults. Some practices are well-known and frequently mentioned in discussions about active and healthy aging. Examples include the enjoyment of group activities, the sense of security gained from daily routines, and the stimulating effect of hobbies. Other practices are less talked about and rarely addressed with technology. Some older adults, for example, told us how they cope with the loss of a loved one, such as a life partner or parent. Others discussed the importance of spirituality in their lives. Following is a list of practices that we found inspiring for the development of a coaching machine.

2.1 Importance of Spirituality

Example Practices

- Prayer.
- Talking to a supernatural being.
- Doing yoga / sylvotherapy
- Conversations about spirituality in a group
- Appreciating miracles / lucky coincidence / unexplainable mystery in daily life
- Practicing gratitude for small everyday experiences

Spirituality is frequently overlooked in technology research (Buie and Blythe 2013). Yet, spiritual experiences can change what individuals know and value, their perspective on the world and life, evolving them as a grown person (Gaggioli 2015). Our collected practices show a significant difference in how spirituality is conceptualized. Some people define spirituality as their belief in God or their practice of a specific religion. Others define it by deeply felt emotions, which may or may not include belief in a higher power, belief in a supernatural realm, or devotion to any single philosophy or set of beliefs. In general, it appears critical to acknowledge the links between spirituality and subjective well-being in older adults. A biopsychosocial-spiritual model provides a holistic approach to well-being that acknowledges the interaction of physical, psychological, social, and spiritual aspects. So far, spirituality has been frequently associated with religious literature, while the potential impact on health has received less attention. In this deliverable, we look at both, religious practice and other sources of spirituality and the meaning older adults ascribe. Specifically, we propose practices with technology that foster spiritual experiences and consequently improve subjective wellbeing.

2.2 Coping with Death

Example Practices:

- Talking to a deceased loved one at their grave.
- Keeping objects that hold memories of a loved person.
- Preparing a eulogy for the funeral of an old school friend

In late adulthood people are more likely to experience the death of a significant other or close friend. The death of a close one is often accompanied by a reminder of one's own mortality. Thus, it also necessitates to develop a point of view about one's own death. Generally, people perceive death based on the values of their culture. However, in Western cultures, death is often a taboo subject that is only discussed in private. This limits the exchange of ideas about best practices and better ways of dying and grieving.

A coaching machine could potentially support older adults to cope with situations of loss and thus improve subjective wellbeing. After all, being well-prepared helps people to face loss and could improve subjective wellbeing. Feeling anxious about the end of life or becoming grief-stricken over the death of a loved one is detrimental for subjective wellbeing.

2.3 The Motivation of Hobbies

Example Practices

- Cycling tours
- Gardening
- Hiking
- Listening to Music.
- Relearning Piano.
- Volunteering
- Playing golf and fishing

Hobbies are self-endorsed activities that people engage in out of passion. Consequently, they are activities that demonstrate high motivational quality because they convey identity, stimulation, and ambition. Understanding older people's motifs to engage in hobbies gives us a better idea on how to achieve high motivational quality. A coaching machine can recommend various activities that promote active and healthy aging, but participation in these activities is dependent on older adults' motivation. A coaching machine could support reflections on what motivates older adults and what they enjoy about the activities they are recommended to do. Discovering personal interest, usefulness, significance is an important motivator for sustained behaviour change.

2.4 Life Stories and Reminiscence

Example Practices:

- Taking time to reflect one's life story.
- Reminiscing while looking at old photos and videos

The personal life story is an important source of subjective wellbeing. Ideally, people look back on their lives with fondness and are proud of how they have grown as individuals. For example, the theory of gerotranscendence suggests that aging people develop new understandings of the self, relationships to others, and fundamental existential questions (Tornstam 1997). Taking time to connect the dots of one's own life story and reflect about personal past is one way to attain new self-knowledge. People's self-concept is largely influenced by their selective reconstruction of their own past and their fictional anticipation of their imagined future (McAdams 2011). Thus, we propose to use coaching machines to trace personal life story and develop a narrative identity.

3 Technology-Mediated Practices with a Coaching Machine

How the self—the entirety of internal qualities like consciousness and agency—plays out in relation to the technology-mediated external world is a significant, emerging concern as human-computer interaction (HCI) (Kou et al. 2019). Technologies introduce new practices, situations and choices that make us aware of what is important to us (Kudina 2021). Further, technology offers an opportunity to help people become the person they desire to be and move them closer to their idealized sense of self in a specific role. For this, people need to engage with their roles, abilities, habits, and goals (Zimmerman 2009). Conversational practices could help to reflect and frame growth on a personal level. In recent years, researchers proposed open-ended systems that enable something they call technology-mediated reflection (Konrad et al. 2016). Developers try to promote reflection through conversational systems that ask questions and engage in short dialogues where chatbots act as a *Reflection Companion* (Kocielnik et al. 2018). In line with this thinking, we conceptualize conversational practices that aim to evoke reflection about individual development and positive aging. In doing so, we cover a broad spectrum of everyday life ranging from spiritual growth to life stories. Further, we pay attention to the distinct experience of having conversations about these topics with a machine.

In this section we describe 4 technology-mediated practices with a coaching machine. In these practices we aim to create a reflective conversation that helps older adults to gain insights and positive experiences. Thus, the coaching machine asks questions to the user to facilitate reflection. These conversations follow three steps:

1. **What happened?** The coaches' questions should prompt the user to recap her/his situation.
2. **So what?** The coaches' utterances should help the user to articulate a problem or viewpoint.
3. **Now what?** The coaches' utterances should help to think of a solution or new perspective.

Overall, the goal is to question tacit assumptions and facilitate the construction of knowledge. That means, the older people use conversational machines to open new vistas for their everyday life. As a result, the new practices construct self-taught knowledge in different areas of life, such as narrative identity, motivation, and self-concept.

That way, a coaching machine for aging could facilitate lifelong learning. Specifically, this entails that older adults engage in ongoing, voluntary, and self-motivated pursuit of knowledge. In doing so, older people use life experience to make sense of new impressions and integrate them into their lifeworld. Thus, they obtain new knowledge by constructing meaning out of new impressions in relation to their past. This knowledge construction requires not only the provision of information but also accompanying processes that help to integrate it.

A coaching machine could facilitate self-motivated learning and personal growth by helping older people to systematically recontextualize mood, motivation, and life experience. Ideally the coach should be autonomy-supportive to leverage motivation for self-endorsed goals (Behzadnia, Deci, and DeHaan 2020).

3.1 Spiritual Introspection

Understanding one's spiritual identity and finding personal meaning requires introspection. Specifically, conscious reflection of one's worldview and sources of meaning can help to find or reaffirm spiritual energy. An older person who described himself as spiritual but not religious explained to us: *"I have not joined any church. I am not the one who only follows the faith, but I think a faith belongs to it and is important. And a realistic faith is all that is intended in a human life."* He described his faith as follows:

“The acceptance that there is still something above our technologies that moves us inwardly, that burdens or delights us inwardly, but that I cannot touch. But I can feel it. And that comes from somewhere. That can be waves, that can be currents and so on. And that should be accepted that there is that in our life.” He believes that faith has to be explored consciously and not blindly followed: *“There are very many people who believe they have a faith, but they experience this faith carelessly. They follow it because it is tradition. They do not face it. They run to church every Sunday because the priest is there. It was always like that, and their parents took them there as a child, and that’s why they do it today. But they don’t move anything.”*

Coaching machines could enable people to discover their spirituality more consciously. Specifically, reflective dialogues could be a form of self-inquiry that yields more profound self-knowledge about personal belief systems. The mechanistic nature of conversing with machines could allow for recurring rituals of questioning the self. Therefore, we propose prompts for reflection that facilitate a user-led understanding of spirituality (also see Annex 8.1)

Table 1 Example Conversation Spiritual Introspection

Coaching Machine: <i>I have a question about spirituality for you? Can you help me out?</i>
User <i>“What do you want to know?”</i>
Coaching Machine: <i>“What makes your life meaningful?”</i>
User <i>“My family. I have raised two wonderful children.”</i>
Coaching Machine <i>“Which role does spirituality play in your life?”</i>
User <i>“Religion is not important to me because I do not like the church”</i>
Coaching Machine <i>“What is the purpose of life?”</i>
User <i>“For me it is being a positive, supportive person for my loved ones.”</i>

3.2 End of Life Conversations

In general, getting older necessitates making plans for old age and developing a perspective on death. This entails pragmatic and emotional reflections, such as, re-examining beliefs, exploring one’s lifetime contribution, and exploring beliefs about an afterlife. Yet, people avoid talking about death for a variety of reasons. Most people find the topic unpleasant, many do not want to upset their loved ones, and some are afraid of death.

In prior conversations an older woman told us about her practice to visit her husband’s grave and talk to him: *“I talk to the tree in the forest as if he was standing right in front of me. If people would see me, they would say, ‘Oha, she is crazy’”*.

Given that death is an inevitable part of life, it appears beneficial to disseminate positive practices that aid in the acceptance of death by older adults. While it is certainly human to fear death, there are well-documented benefits of accepting attitudes towards death. Specifically, thinking and talking about death enables older people to be well-prepared, to cope better, and to purposefully shape the remaining life (van der Kaap-Deeder et al. 2020).

The emergence of social media has given rise to new opportunities for communication, exchange, and support (Sofka 1997). The deliberate effort to confront and plan for the final moments of this life has enabled practices that are conducive to a well-prepared death, rather than escalating death fears (Lee 2019). Coaching machines could play an important role in spreading practices that are conducive to a better death. Users could learn about thanatos practice from them, and they could also get help planning and taking the necessary actions to prepare for the inevitable end.

A hospice manager with whom we discussed coaching machines emphasized the importance of releasing unspoken thoughts: *“We often ask dying people: ‘Who do you want to tell something? Write a letter. You do not have to send it.’ But who can still do that? Maybe that [conversational machine] is an opportunity to get something off one’s chest.”* An older person imagined a similar practice: *“My children are not always available or in a situation where they can or want to hear such things. If I am older and cannot write anymore, I could imagine saying to the coaching machine: I want to leave this message for my grandchildren”*

In conclusion, a coaching machine might promote more sober discussions about death and encourage individuals to consider their own preferences, hopes, and wishes. Therefore, we propose prompts for reflection that facilitate a user-led understanding of death-related topics (also see Annex 8.2)

Table 2 Example End of Life Conversation

Coaching Machine <i>“As a robot I do not understand human death. Can I ask you a question?”</i>
User <i>“What is your question?”</i>
Coaching Machine <i>“What does your death mean to you?”</i>
User <i>“It is the end of my life. My time will be over”</i>
Coaching Machine <i>“What happens after death?”</i>
User <i>“I will join my ancestors. Hopefully future generations will look up to me.”</i>
Coaching Machine <i>“When you die, what do you want to be remembered for?”</i>
User <i>“I was always true to myself. I have lived by my values”</i>

3.3 Reflection of Motivation

In prior conversations with older adults, we came across different anecdotes that illustrate the challenge of finding the will to change. For example, one older woman told us: *"I'm not a gourmet cook; it must taste good. There can also be mayonnaise in it. [...] So, I don't know if you can ask older people to change their lifestyle habits that they had over 60 or 70 years. Change is hard."* Another older person told us: *"I don't like whole grain pasta. I could never let myself be persuaded that it is healthier, especially by a computer. I even know it's healthier. I think what bothers me so much, is that someone tells me how to do it. I prefer to do it myself"*. If we take this seriously, it becomes important to support user-led sensemaking and decisions. This also becomes apparent by the statement of an older adult who imagined using a coaching machine to verify his own actions: *"Am I a climate activist now? [...] was my reaction too much. Did I behave like an activist? Are the others correct?"*. The conversation with the coaching machine is used to trigger reflection about the own behaviour.

These insights are also undergirded by literature about aging and motivation. As people become older, they strive to stay true to themselves and regulate their behaviours according to self-endorsed motives. For example, people who have become achievement and success oriented throughout their lives may seek competence, validation, and progression in their activities. Ideally, advice for active and healthy aging should match with people's motives to create resonance. For machines, such as a virtual coach, it can prove difficult to develop holistic understanding of people's motives. A more efficient approach could be to utilize self-knowledge and reflection to enable a user-led understanding of motivation.

Thus, we propose that a coaching machine could help older adults to generate self-knowledge about their motivations. Furthermore, it could empower older adults to improve motivational quality by making sure that new activities, such as healthy cooking, fit to individual motives. Consequently, older adults could engage in a self-regulated pursuit of personal goals.

In this context, conversations with a machine could afford an honest articulation of attitudes and feelings towards certain activities. Therefore, we propose prompts for reflection that facilitate a user-led understanding of preferences, habits, and motives (also see Annex 8.3).

Table 3 Example Conversation Reflection on Motivation

Coaching Machine <i>"What did you do today?"</i>
User <i>"I went fishing with friends"</i>
Coaching Machine <i>"Why did you choose to do this activity? What was your motivation?"</i>
User <i>"I did it because a friend suggested to do it."</i>
Coaching Machine <i>"How does it fit to your own goals"</i>
User <i>"I also like fishing. It relaxes me."</i>

3.4 Autobiographical Recall

In prior interviews, an older person told us about their practice to look at old photos and videos. *“Looking at these photos reminds me of when I was young, of all the holidays I took with friends, all the adventures I had with them”*. Another aging person told us how retrospection makes him appreciate all aspects of life: *“You sort and reclassify the memories to understand – yes that was helpful for my personal growth”* Further, he explained that it is important to trace back the personal life story: *“I try to analyze the values that made me become who I am today”* For him, this helps to attain gratitude for his personal development: *“Not everything in my life came easy to me. I had to invest a lot of time and effort into studying. [...] If I look back today, I must be thankful that my sister and my parents supported me on this path.”*

Indeed, research indicates that autobiographical recall can strengthen the sense of self (Götz et al. 2022). The personal life story and self-defining memories shape how older people experience themselves (McAdams 2011). Ideally, lived experience should be aligned with the personally held values and authentic. Consequently, positive aging with self-determination in mind could use autobiographical recall to strengthen the sense of self and promote personal growth.

A coaching machine could facilitate autobiographical recall and listen to all kinds of stories from the past. Reflective conversations could guide retrospection so that older adults derive implications for the present and integrate their past selves in new stages of their life. The coaching machine might ask questions that elicit memories of the past, for example to recall mastery experiences or happy memories. Recalling and telling memories could help to validate a personal life story and remember it fondly. Conversational machines might be fit for this because they have endless patience and do not mind listening. We propose a set of prompts to facilitate conversations about past events (also see Annex **Error! Reference source not found.**).

Table 4 Example Conversation Autobiographical Recall

<p>Coaching Machine</p> <p><i>“I want to know more about your past? Do you want to talk about it?”</i></p>
<p>User</p> <p><i>“Okay. What should we talk about?”</i></p>
<p>Coaching Machine</p> <p><i>“What is a past accomplishment that makes you proud?”</i></p>
<p>User</p> <p><i>“I used to be a very good dancer and went to all kind of competitions.”</i></p>
<p>Coaching Machine</p> <p><i>“Why does this memory make you proud?”</i></p>
<p>User</p> <p><i>“Because I worked hard to become better.”</i></p>
<p>Coaching Machine</p> <p><i>“What did you learn from this?”</i></p>
<p>User</p> <p><i>“I learned to not give up after the first try”</i></p>

4 Wise words from a Coaching Machine

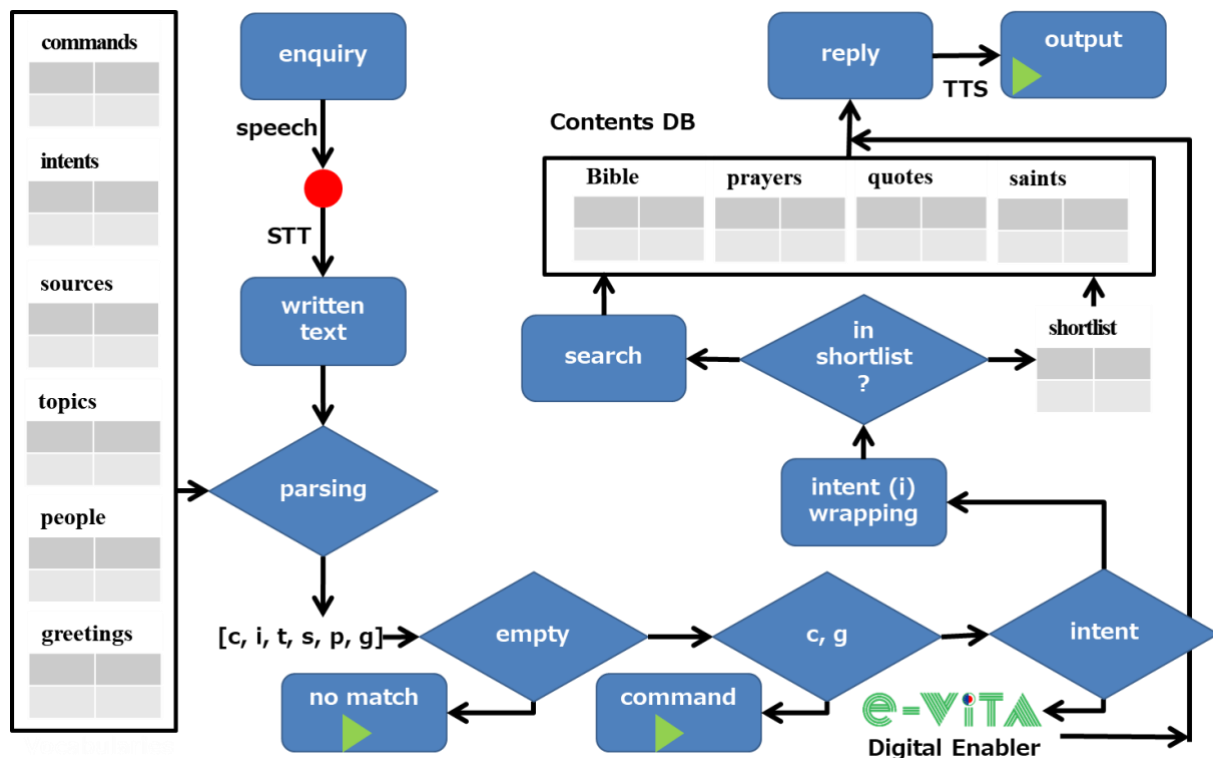
4.1 Knowledge bases

DarumaTO and CeleSTE were equipped with a local knowledge base, which will function also in absence of the e-ViTA dialogue empowerment.

This knowledge is based on sources of theological (Christian Catholic) content on one side, and traditional folklore (Japanese) on another. The architecture of the local dialogue system with Danto, the software platform inside DarumaTO and CeleSTE, is made as follows.

The input speech is pre-emptively processed and filtered:

- Cases of failure, such as silence, noise, or non-recognisable words, will be resolved by appropriate responses by the robots (such as “Could you repeat please?”)
- Cases of direct answer: these cases includes greetings, specific commands, and generic chat that is specific to the device, such as asking the device’s name.
- In the third case, the intent will be evaluated. In case of request of “wise words” about a list of topics, the reply will be handled locally. In all the other circumstances, the input will be transferred to the e-ViTA Digital Enabler and handled by RASA dialogue system.



Examples:

- What’s your name?

- This sentence will be answered directly (indicated as “command” in the figure”) by the local dialogue system of the device
- I'd like to hear wise words about the afterlife
 - This sentence will be identified as an intent of request of wise words, which will be responded by the local dialogue system of the device, through some content related to the keyword “afterlife”
- What’s the afterlife?
 - More generic questions are passed to the Digital Enabler and handled by remote RASA.

For Celeste, the following keywords are available:

abortion	good heart	pity	suffering	disability
afterlife	grace	plague	terrorism	disease
ageing	gratitude	politics	tiredness	divorce
angels	greed	poverty	tomorrow	end of the world
anger	grief	pregnancy	trouble	envy
apocalypse	happiness	progress	trust	faith
beatitude	hatred	providence	unemployment	family
bless	health	redemption	war	fear
brother	heaven	resurrection	virginity	freedom
care	holocaust	sadness	wealth	forgiveness
charity	holy spirit	salvation	work	future
children	homeland	sex	worry	gift
church	homosexuality	shame	youth	global warming
climate	honesty	sickness	life	glory
confession	hope	sin	loneliness	mistake
corona	humanity	solidarity	love	paedophilia
death	impairment	soul	marriage	pandemic
devil	islam	struggle	mercy	peace
joy	judaism	learning	kindness	

4.2 Filtering and discriminants

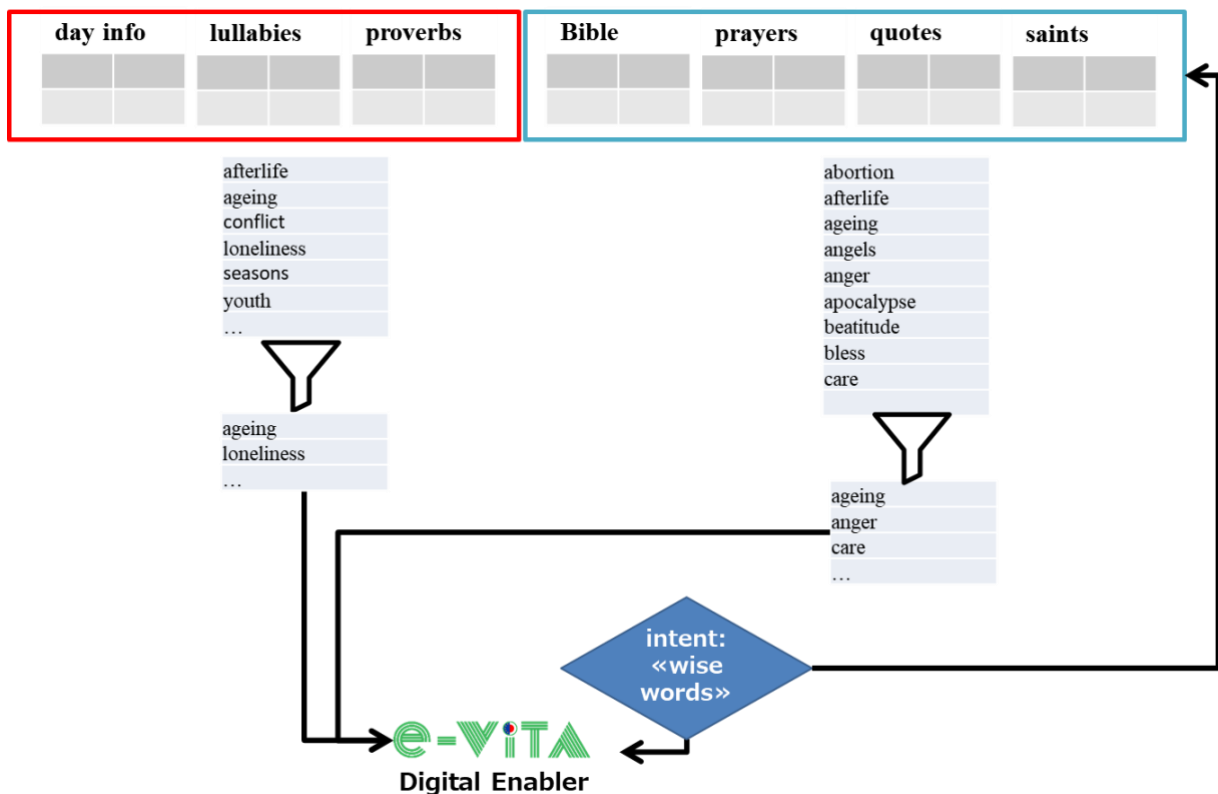
Part of the database is then filtered and adapted to be part of the knowledge base for all devices.

In other words, the case #3 that forwards the request to RASA may be able to answer to some of the spiritual topics, across all devices.

In the previous example of Celeste keywords, they have been categorised (many keyword to one cat_) and then filtered, leaving out the religion-specific topics. The final categories list looks as follows:

cat_advice	cat_happiness	cat_protection	cat_freedom	cat_gratitude
cat_ageing	cat_help	cat_romance	cat_friendship	cat_greed
cat_anger	cat_homeland	cat_sadness	cat_future	cat_war

cat_children	cat_human	cat_shame	cat_peace	cat_problem
cat_climate	cat_justice	cat_sibling	cat_plague	cat_pandemic
cat_death	cat_learning	cat_sickness	cat_politics	cat_poverty
cat_disabled	cat_love	cat_solidarity	cat_wealth	cat_forgive
cat_divorce	cat_marriage	cat_suffering	cat_wish	cat_worry
cat_envy	cat_mercy	cat_tired	cat_work	cat_progress
cat_family	cat_mistake	cat_trust	cat_giving	



The Japanese side also has a similar database which gets reduced and merged to the generic knowledge base.

RASA features its own way of handling this information through JSON files, which are structured as in the following sample code:

```

"religion": [
  {
    "id": 0,
    "name": "christianity",
    "faith":
    {
      "Joh14:23": "Jesus replied: Anyone who loves me will keep my word,
and my Father will love him, and we shall come to him and make a home in
him."
    }
  }
]

```

```

    },
    "heaven":
    {
        "Joh14:6": "Jesus said: I am the Way. I am Truth and Life. No one
can come to the Father except through me."
    }
}
]
}

```

5 Main Outcomes and further Implications for e-VITA

This deliverable describes conversational practices that we conceptualized to improve the subjective wellbeing of older adults. Specifically, we discuss the potential of reflective conversations and inspirational quotes.

5.1 Summary of implemented activities

We report the results from two activities to conceptualize conversational practices with a coaching machine:

Creation of reflective dialogues that facilitate subjective wellbeing. The aim of this activity was to create dialogues for conversational machines. For this, we used anecdotal practices of older adults, that we identified in an earlier deliverable, as inspiration to create reflective conversations. The aim of these conversations is to make people think about themselves and develop a point of view about aging, motivation, spirituality, and their life.

Compiled knowledge base with wise words from religious sources. The aim of this activity was to identify device-agnostic content from theomorphic devices and make it available to the other coaching devices in e-Vita. Therefore, we scanned the existing knowledge base which consists of verses from the bible and quotes and representatives of roman catholic church, such as saints. We then selected proverbs, quotes, and words of wisdom that do not contain explicit reference to religious belief.

5.2 Main Implications for the e-VITA project

This deliverable introduces a new set of dialogues to the e-VITA project. Compared to other dialogues that aim at the provision of “factual” information, these new kind of dialogues aims to stimulate self-reflection. This opens new avenues for behaviour change because they enable change from within. While coaching AHA is often understood as instructing and lecturing older people about a healthy lifestyle this tends to create reactance. In the worst case, people respond to this external pressure by adopting contrary belief, such as insisting on their habits. Possibly, reflective dialogues empower users to identify their own desire for personal growth, change, and development and subsequently complement the more informational and instructional approaches.

5.3 Relation to other Deliverables and WPs

This deliverable is part of WP3 of the e-VITA project. The overall goal of this work package is to provide contents for coaching devices that promote active and healthy aging. Specifically, this deliverable focuses on everyday practices and spiritual dialogues with conversational machines. Other deliverables in this work package focus on health promotion (D3.7), cultural and gender issues (D3.8). As a next step, D3.9 aims to provide a holistic description of the overall user experience of using e-VITA coaching devices.

6 Conclusions and Outlook

The deliverable outlines conversational practices with coaching machines to enhance older adults' subjective wellbeing. For everyday practices, we decidedly take a user-led approach to coaching. For matters of faith, meaning, and personal growth, it would undoubtedly be inadequate to offer universal guidelines. Instead, we only provide thought-provoking impulses via coaching machines and leave the sensemaking to the users. Consequently, we foster self-directed learning in the areas of spirituality, death, motivation, and reminiscence.

In other deliverables of WP3 we have created more conversational practices with coaching machines. They all together make up the coaching machine usage scenarios that we go into more detail about in D3.9. The re-design of the e-VITA coaches will be influenced by these newly created contents for coaching machines. Thus, we take a biopsychosocial-spiritual approach that enables a holistic experience of positive aging and well-being.

7 References

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8 Annex

8.1 Spiritual Introspection

- utter_prompt_spiritual_identity:
 - text: "Which role does spirituality play in your life?"
- utter_prompt_spiritual_meaning:
 - text: "What makes your life meaningful?"
- utter_prompt_spiritual_gratitude:
 - text: "What are the things that you are most grateful for right now?"
- intent: examine_spiritual_beliefs
 - examples: |
 - Spirituality and religion [are/are not] important to me because...
 - The role that spirituality plays in my life is...
 - If today was my last day on earth, I would want to...
- intent: examine_spiritual_meaning
 - examples: |
 - Spirituality and religion [are/are not] important to me because...
 - The role that spirituality plays in my life is...
 - If today was my last day on earth, I would want to...
- intent: examine_spiritual_gratitude
 - examples: |
 - I am grateful that I am still in good health.
 - I am grateful for the time I spend with people who are important to me
 - I am grateful that I live in a free country where I can shape my life the way I want

8.2 End of Life Conversations

utter_death_prompt_examine_beliefs:

- text: "What happens after death?"

utter_death_prompt_meaning:

- text: "What does your death mean to you?"

utter_death_prompt_posthumous_reputation:

- text: "When you die, what do you want to be remembered for?"

utter_death_prompt_afterlife:

- text: "What do you wish for your loved ones after death?"

utter_prompt_final_disposition:

- text: "What should happen to your body after you die?"

utter_prompt_bad_death:

- text: " What is the worst way to die?"

utter_prompt_good_death:

- text: "What is a good way to die?"

utter_prompt_death_anxiety:

- text: "Are you afraid of death?"

intent: death_examine_beliefs

examples: |

- I will find everlasting peace in heaven
- I will see grandma and grandpa
- I will go to hell
- I will join my ancestors
- It's unknown

intent: death_meaning

examples: |

- My plans will come to an end
- I don't want to think about it.
- It happens to all of us
- It is the end of my life

intent: death_afterlife

examples: |

- My children can use the insurance money
- My wife will get my possessions
- My family members should move on with their life

intent: death_good_death

examples: |

- I would like to die at home
- I just hope that it is sudden, painless, and overnight
- I want to die surrounded by loved ones
- I hope that I will go to heaven

intent: death_bad_death

examples: |

- I don't want to die alone
- I still have so many things I want to do. I don't want to die before that.
- I don't want to be pitied
- I don't want to become a burden for my family

8.3 Reflection of Motivation

- intent: review_the_day

examples: |

- Good evening
- I am going to sleep now
- Let me tell you about my day
- I had a long day
- Time to sleep

- intent: tell_about_activity

examples: |

- I went [fishing>{"entity": "activity"} with friends yesterday.
- Just came back from [piano class>{"entity": "activity"}
- Just went for a [Walk>{"entity": "activity"}
- I [played golf>{"entity": "activity"} in the afternoon.
- I finished [reading] my book {"entity": "activity"}

- intent: reflect_activity_motivation_ordered

examples: |

- My doctor told me to do it.
- You told me to do it.
- I am just following the guidelines.
- It was on my schedule.

- intent: reflect_activity_motivation_expected

examples: |

- I did it because a friend wanted to do it.
- I did it to beat my competitors.
- I did it because I should live healthier.
- It was recommended to do that.

- intent: reflect_activity_motivation_self_endorsed

examples: |

- It is good for my health.
- It relaxes my mind.
- I like spending time with my friends.
- I feel vital while doing it.

- utter_review_day:

- text: "Tell me about your {date} day."

- utter_investigate_activity:

- text: "Why did you chose to do this activity? What was your motivation?"

- utter_reflect_motivation_ordered:

- text: "Sounds like you do it because someone told you to. You should try to understand why they want you to do it."

- utter_reflect_motivation_expected:
- text: "Sounds like you do it more for others than yourself. Think about how it fits to your goals."
- utter_reflect_motivation_self_endorsed:
- text: "Sounds like you are getting closer to your goal. How does it fit together with other things that are important to you? "
- utter_reflection_complete:
- text: "Thanks for sharing your thoughts. I can't help you any further. The rest you need to find out for yourself"

8.4 Autobiographical Recall

- intent: talk_about_past
examples: |
 - Back in the days things were different
 - When I was younger, I could have done that
 - At the time when I was still working
 - When my children were young, we always used to do that together
- intent: articulate_past_relationship
examples: |
 - I spend more time with my children when they were still living here.
 - When my father was still alive, I always used to visit him on this day.
 - I used to spend more time with friends. Now it is difficult for me to meet them.
 - When the grandchildren were small, they used to come over more often.
- intent: articulate_past_achievement
examples: |
 - Work was more fulfilling in my earlier job.
 - I used to be a very good dancer and went to all kind of competitions.
 - I was able to contribute to society.
 - I was a great entrepreneur and started successful businesses
- intent: articulate_past_life
examples: |
 - I travelled to Portugal 20 years ago. That was a wonderful experience.
 - We had this memorable Christmas party in town where everyone was invited.
 - As a teenager I really liked to listen to this song.
 - The best job I ever had was to repair an old sports car.
- intent: derive_meaning_from_past
examples: |
 - That is when I learned an important lesson for me: Never lose faith.
 - All I had to do was trust in myself.
 - That made me understand the importance of friends.

- At that point it was clear to me that family comes first.

- intent: draw_conclusion_for_future

examples: |

- I want to live independent for as long as possible.
- I should call that old friend of mine.
- I want to spend more time with my family.
- I should go to church more often.

utter_tell_about_past:

- text: "Sounds like you had some good moments in the past. What was good back then"

utter_learn_from_past:

- text: "It is good to have those memories. What do they mean to you?"

utter_look_into_the_future:

- text: "What does it mean for your current situation. Is there anything we can learn from this?"

utter_prompt_lifetime_contribution:

- text: "What is the accomplishment you are most proud of?"

- intent: lifetime_contribution

examples: |

- One of my proudest achievements is...
- One of the biggest triumphs in my life was...
- When I'm gone, I would like to be remembered for...
- A time when I felt really proud is...

utter_prompt_life_choices:

- text: "What significant decision did you face in your life?"

- intent: life_choices

examples: |

- One of the most rewarding experiences in my life was...
- One of my greatest regrets is...
- One of the turning points in my life was...
- A tough decision I had to make was...
- Something that I was really conflicted about in my life was...