



EU-JAPAN VIRTUAL COACH FOR SMART AGEING

D9. 5 – Final Scientific Dissemination Report

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Executive Summary

Deliverable D9.5 is concerned with the final status on the scientific dissemination of the whole e-VITA Consortium in Japan and in Europe. It is the result of the whole 39 months of dissemination activities from the e-VITA Partners strictly following the initial plan and guidelines provided by the first and updated deliverables D9.1 (at M6) and D9.4 (at M18). It has therefore used and applied the different means established in D9.1 such as the communication tools, different channels, and information on relevant and classified conferences and journals, but also the up-dated process based on an online publications contents and levels very helpful to conduct real-time statistics on the whole consortium publications status. As result, D9.5 aims to provide a final picture on the submitted, accepted and already published scientific communications and articles, as well as for Journals or revues as peer-reviewed conferences or workshops. As perspective for the future, there is a large place for new publications outside the e-VITA project.

Acronyms and Abbreviations

WP	Work package
TBD	To be defined
USI	University of Siegen - Germany
AGE	AGE Platform - Belgium
WPM	Work Package Manager
MS Teams	Electronic communication system adopted by e-VITA
POC study	Proof of Concept study

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1 Introduction

Deliverable D9.5 is concerned with the final status on the scientific dissemination of the whole e-VITA Consortium in Japan and in Europe. It is the result of the whole 39 months of dissemination activities from the e-VITA Partners strictly following the initial plan and guidelines provided by the first and updated deliverables D9.1 (at M6) and D9.4 (at M18).

Section 2 is briefly recalling the methodology established in previous deliverable D9.1 (M6), and the positive experience with it, namely by a regular publications results follow-up. Then section 3 is providing the status on the actual and final production of scientific communications and journal articles, namely if submitted, accepted and already published. Section 3 also aims to provide a plan for future publications in a collaborative way inside e-VITA and beyond the project. Finally, section 4 gives the conclusion and the perspectives to pursue the publication activity beyond the e-VITA project.

2 Methodology followed to ease scientific publication

Initially defined in the deliverable D9.1, the methodology for helping and pushing Partners to publish consisted in using different channels of communication in order to facilitate the scientific dissemination in general internally and externally which are recalled hereafter:

- the Bulletin Board where regular updates regarding dissemination activities, news, conference information, etc., located in a specific channel of the e-VITA MS Teams system, could be posted by each Partner to share information with all the members of the e-Vita consortium under the responsibility of WPMs.
- An online Excel table listing different calls for conferences and journals for publications and the submission with status of different communications done by the partners. The table was regularly updated and maintained throughout the duration of the project.
- Internal project Webinars to inform colleagues about the current research performed by the e-VITA Partners: it could also be used as an invitation to internal Partners to hold scientific Webinars generally open to public audience.
- An additional channel to supplement the previous ones, devoted to underway publications, that each Partner could use to make aware the intention to publish and possibly upload a current version of his article or communication for either participation or approval.

Each Partner who intended to publish a work related to e-VITA had indeed to respect the rules regarding dissemination policy in the Consortium and Coordination Agreements signed by all e-VITA Partners as described in details in D9.1 (and recalled in D9.4), in order to be in accordance with statements of the Consortium Agreement and the IP rules (see also final D9.13 on IPR strategy).

It was also reminded that each publication done in the frame of e-VITA has to mention the H2020 e-VITA project funding, that was also for some publications in relation to e-VITA but not-funded by it a cause of rejecting the publication from the e-VITA list of retained articles.

3. Publication status at M39 and perspectives beyond the official e-VITA project end

3.1 Summary table of Publications

Articles in Journal			
Status	Title	Involved partners / First Author	Title of the Journal or Equivalent
Published (2022)	A systematic review of multidomain and lifestyle interventions to support the Intrinsic Capacity of the older population"	INRCA, CARITAS, UNIVPM, NCGG, TOHOKU, IGOU, USI Bevilacqua et al.	Frontiers in Geriatric Medicine
Published (2022)	Social Capital Mediates. The Association between the ICT Usage and Well-Being of Older People in Japan: Implications for the Development of Virtual and Human Coaches for Older People	Tohoku, USI Kokubun et al.	Sustainability – MDPI, 2022
Published (2022)	The problem of monitoring activities of older people in multi-resident scenarios: an innovative and non-invasive measurement system based on wearables and PIR sensors	UNIVPM Nacarelli et al.	Sensors – MDPI, 2022
Published (2022)	Video connecting families and social robots: from ideas to practices putting technology to work	USI Schwaninger et al.	Universal Access on the Information Society vol. 22 – Springer Link 2022
Published (2022)	Using a Smart Living Environment Simulation Tool and Machine Learning to Optimize the Home Sensor Network Configuration for Measuring the Activities of Daily Living of Older People	UNIVPM Nacarelli et al.	Buildings – MDPI, 2022

Published (2022)	User Perceptions and Needs Analysis of a Virtual Coach for Active and Healthy Ageing—An International Qualitative Study	CARITAS, INRCA NCGG, IGOU, APHP, USI, TOHOKU Möller et al.	Journal of Environmental Research and Public Health, 2022
Published (2022)	Remote international collaboration in scientific research teams for technology development – an exploration of team culture and efficiency	SARAH JANBOECKE ODR GmbH on behalf of TOHOKU and USI Janböcke et al.	International Journal of Advanced Computer Science and Applications (IJACSA), Vol. 13 Issue 9, 2022
Published (2023)	Human Coach Technology Reactance Factors and their Influence on End-Users' Acceptance of e-Health Applications	TOHOKU, USI Janböcke et al.	International Journal of Advanced Computer Science and Applications(IJACSA), Vol. 14 Issue 10, 2023
Published (2023)	Fridolin : participatory design and evaluation of a nutrition chatbot for older adults	USI Weber et al.	ICOM Journal - De Gruiter – 2023
Published (2023)	Interaction with a virtual coach for active and healthy ageing	IXP, AIST, INFAl, IMT, USI McTear et al.	Sensors, Special Issue – MDPI, 2023
Published (2023)	Empowering Smart Aging: Insights into the Technical Architecture of the e-VITA Virtual Coaching System for Older Adults	UNIVPM, ENG, IXP, AIST, INFAl, IMT, USI, TOHOKU Nacarelli et al.	Sensors – MDPI, 2023
Published (2023)	Intrinsic Capacity and Active and Healthy Aging Domains Supported by Personalized Digital Coaching: Survey Study Among Geriatricians in Europe and Japan on eHealth Opportunities for Older Adults	CARITAS, INRCA, TOHOKU, USI, APHP, AGE, NCGG Möller et al.	JMIR – 2023
Published (2024)	Towards innovation in healthcare: analysis of the digital behaviour of older people in Europe and Japan for the introduction of a technological coaching system	CARITAS, INRCA, TOHOKU, USI, APHP, AGE Möller et al.	Healthcare – MDPI, 2024
Published (2024)	Technology-Enabled Senior Living: A Preliminary Report on Stakeholder Perspectives	CARITAS, INRCA, TOHOKU, USI, APHP, AGE Möller et al.	Healthcare – MDPI, 2024

Published (2024)	e-VITA study protocol: EU-Japan virtual coach for smart aging	INRCA, CARITAS, APHP, TOHOKU, USI Bevilacqua et al.	Frontiers in Public Health, 2024
Accepted	Society 5.0: Digital Twins for Aging - Approaches in Actual Research	USI, IXP, TOHOKU, AIST, IMT, INRCA, UNIVPM Lehmann et al.	Sustainability – OAP, 2024
Accepted	Ethical principles in e-Healthcare technologies with older adults: a narrative review	APHP, JQA, USI, INRCA Palmier et al.	International Journal of Environmental Research and Public Health, ScienceConf, Uni. Paris8 et Sorbonne Uni., 2023

Chapters in a book/Books

Status	Title	Involved partners / First Author	Title of the Journal or Equivalent
Published	Three years of E-VITA activities	Tohoku, IGOU, MISAWA, AIST, WASEDA, SHIBAURA	Taki et al.

Publications in Conference proceedings/Workshops

Status	Title	Involved partners / First Author	Title of the Journal or Equivalent
Published (2022)	Experiments on the Nao Robot as a Virtual Coach	Tohoku, AIST Ogawa et al.	JSAI-2022 International Session Robots and real worlds
Published (2022)	Empowering Well-Being Through Conversational Coaching for Active and Healthy Ageing	IXP, AIST, INFAL, IMT, USI McTear et al.	ICOST'2022
Published (2022)	Care Workers Making Use of Robots: Results of a Three-Month Study on Human-Robot Interaction within a Care Home	USI Carros et al.	CHI'22 – Conf. on Human Factors in Comp. Syst., New Orleans, 2022
Published (2022)	A virtual companion for older adults using the Rasa Conversational AI framework	IXP Varghese Marokkie et al.	Conversations 2022

Published (2022)	Hazard Identification for a Virtual Coaching System for Active Healthy Ageing	AIST Homma et al.	ITAP 2022 (held as part of HCII2022)
Published (2022)	Well-Being and Comfort of Ageing People Based on Indoor Environmental Conditions: Preliminary Study on Human-Coach Conversation	UNIVPM, AIST Nacarelli et al.	MetroLivEn 2022- IEEE International Workshop on Metrology for Living Environment, 2022
Published (2022)	Retrospective insights on the impacts of the Catholic robot SanTO	Shibaura Trovato et al.	CHI Conference on Human Factors in Computing Systems (CHI '22) – Ed. Robophilosophy 2022
Published (2022)	Knowledge-Based Dialogue System for the Ageing Support on Daily Activities	AIST Vizcarra et al.	HCII-2022, Springer Conf. proceedings
Published (2022)	Not that uncanny after all? An Ethnographic Study on Android Robots Perception of Older Adults in Germany and Japan	USI, Tohoku, AIST Carros et al.	ICSR 2022
Published (2022)	Participatory design and early deployment of DarumaTO-3 social robot	Waseda, Tohoku Shen et al.	IEEE RO-MAN 2022
Published (2022)	Integration and Interaction of Trustworthy AI in a Virtual Coach – An Overview of EU-Japan Collaboration on Eldercare	AIST Jokinen et al.	Advances in Artificial Intelligence – Selected Papers from the 35th Annual Conference of Japanese Society of Artificial Intelligence (JSAI 2021).
Published (2023)	e-VITA Use Cases Configurator: A Tool to Identify the Optimal Configuration of the Sensor Network and Coaching Devices to Enable Older People to Age Well at Home	UNIVPM, INRCA, AIST Nacarelli et al.	MetroLivEn 2023- IEEE International Workshop on Metrology for Living Environment, 2023
Published (2023)	“Never complain, never explain”: why robots may not have to be explicable after all	WASEDA, Shibaura Trovato et al.	ICRA XRo - Workshop on Explainable Robotics, 2023
Published (2023)	Contextual Coaching: Support for Well-being based on Environmental Sensor Information and Conversational AI	AIRC-AIST Jokinen et al.	JSAI-2023 International Session Robots and real worlds

Published (2023)	A virtual Assistant Dedicated to the Accompaniment of the Person, Informed of his Life Context, thanks to the Smartphone	IMT Szczepaniak et al.	PETRA Conf. 2023, Korfu - ACM Digital Library
Published (2023)	Dying, Death and the Afterlife in Human-Computer Interaction. A Scoping Review	USI Albers et al.	CHI 2023
Published (2023)	Un assistant virtuel dédié à l'accompagnement de la personne, averti de son contexte de vie, grace au smartphone	IMT Szczepaniak et al.	Conférence JetSan 2023, Aubervilliers, ScienceConf Uni-Paris8 et Sorbonne
Published (2023)	Home monitoring for frailty detection through sound and speaker diarization analysis	IMT, NewsBridge, UTC Tevisen et al.	Conférence JetSan 2023, Aubervilliers, ScienceConf, Uni-Paris8 et Sorbonne Université
Accepted	Let's Talk About Death: Existential Conversations with Chatbots	USI Albers et al.	CHI'24 - Conference on Human Factors in Computing Systems, 2024
Accepted	Privacy Preserving Personal Assistant with On-Device Diarization and Spoken Dialogue System for Home and Beyond	IMT, Shankaa, NewsBridge, Speech Morphing Inc. Chollet et al.	IHIET-AI 2024 11th Int. Conf. on Human Interaction & Emerging Technologies : AI & Future Applications, 2024
Accepted	Is the plan ready yet? Exploring LLMs when talking about well-being and health	AIRC-AIST Jokinen et al.	14th International Workshop on Spoken Dialogue Systems Technology, 2024
Submitted	Social Isolation and Resilience of older adults in Japan: insights from a qualitative interview study	Tohoku, NCGG, IGOU Browne et al.	AGen2024 - 10th Asian Conference on Aging & Gerontology, 2024
Submitted	Implementing Data-Driven Environmental Dialogues to Enhance Well-Being of Aging People at Home With the e-VITA Virtual Coaching System	UNIVPM, IMT, ENG Nacarelli et al.	MetroLivEnv 2024 - IEEE International Workshop on Metrology for Living Environment, 2024
Submitted	Large Language Models and RAG Approach for Conversational Coaching – Experiments for Enhancing e-VITA Virtual Coach	AIST, InfAI Jokinen et al.	33rd IEEE International Conference on Robot and Human Interactive Communication

3.2 Analysis of publication results and perspectives beyond the e-VITA project

3.2.1 Analysis of Key Performance Indicators (KPI) on scientific dissemination

In the Technical Annex of the e-VITA project, KPI for scientific dissemination have been established according to EC rules. They are specified as follows:

- Papers published on indexed International Scientific-Technical Journals > 20; (*Category 1*)
- Papers published on other journals/technical magazines in EU and Japan > 30; (*Category 2*)

At the end of the e-VITA project, the partners have published and submitted a list of 42 scientific articles for journals, conferences and book chapters or books. This gives namely gives per category:

- **17 articles in Journal published (15) and accepted (2)**
- **1 Book published**

- **21 articles for conferences published (18) and accepted (3)**
- **3 articles for conferences in submission**

In comparison to the mid-term period (last up-date at M18), there was a substantial acceleration of papers publications, going from 18 papers at M18 to 42 papers at M39 with potentially several additional publications in the short-/mid-terms periods as depicted later in section 3.2.2 on the Publications planning beyond the end of the project. Of course, the KPI are not rigorously reached, in particular,

- 18 published and accepted journals and Books still < 20 KPI but not so far away from the target, which should be reachable after the project without any problems by the publications of the POC (see section 3.2.2 on the Primary publications plan in short-term period after the end of the e-VITA project)
- 21 published and accepted conference with 3 potential additional submitted, so still < 30 KPI, but a few less by 6, but we can consider here that the e-VITA consortium made a very valuable effort considering the delay for the conference publications, in part due to the first year spent in COVID closed conditions, and that KPI could be reached considering the Primary publications plan in next section 3.2.2.

Nevertheless, under the impulsion of the coordinators TOHOKU and USI, the e-VITA Consortium has taken the decision to pursue a collaborative conferences and journals publications and concrete publications planning are provided in the following section for the future beyond the e-VITA project.

On the other hand, one has to mention that all the papers/articles are open-accessed from at least all the European part of e-VITA consortium and for the Japanese part, they are not mandatorily open-accessed.

3.2.2 Publications planning beyond the end of the project

In comparison to deliverables D9.1 and D9.4, the planning for potential new publications has been summarized, in the here-below table under the initiative of TOHOKU, which is a global planning to be followed under the good willingness from the e-VITA partners to pursue their collaboration beyond the ended project. Indeed, by considering again the previous publication statistics recorded for the whole project duration (see 3.2.1), i.e. a list of 42 scientific articles for journals, conferences and book chapters and by including 3 additional potential publications in draft status, ***the publication level is by 8 publications less with regard to the total KPI (30+20)*** with a quite good balance between journals and conferences. Therefore, the effort would be not so much high for the consortium to pursue their publications cadence by the end of 2024 with some appointments already in view in already pre-selected conferences and journals where the different e-VITA partners already publish in a regular way.

The identified themes are still on the evolutions of the e-VITA POC and prototypes derived from their modular architecture, namely through as well as Final evaluation results and related data statistics, as their different processing stages like Dialog Management, Knowledge Graphs, emotion tracking, speaker diarisation and sensors data classification and data fusion.

Table: Planned **Primary** publications based on POC.

Authors of the Paper	Focus of the paper	Content related outcome	Tech related outcome	Expected result and how the result can be used in the future
Ogawa et al. (all POC study partners) TOHOKU, INRCA, APHP,	Main Result Paper of the POC	All quantitative measures from the POC incl. Study endpoints	Use of the coaching system	Proof of Concept for dissemination and exploitation of the main project results
Rigaud et al. (all POC study partners) APHP, TOHOKU, INRCA, CARITAS, IGOU, USI	Qualitative Results of the POC	Appropriation of end-users use of the e-VITA system	Design related topics	How did the users use the overall e-VITA system? Identification of enablers and barriers in real life settings
Bevilacqua et al. (all POC partners) INRCA, TOHOKU, APHP, CARITAS,	Secondary Endpoints Paper of the POC including sub-measures of all variables of different health	All secondary measures from the POC incl. Physical, Cognitive, Emotional and Social Outcomes	Use of the coaching system and related efficacy	Proof of Concept for further dissemination and exploitation of the project results.

Bevilacqua et al. (all POC partners) INRCA, TOHOKU, APHP, CARITAS, IGOU, USI	Relationship between the physical activity level and technology use	Physical ctivity related data test results , factors contributing	Step counts, e-Vita app login data	How The use of technology related to the physical activity level. it change according to the cognitive function level. Use smartphone with caution due to cognitive function level.
Manavi et al. (all POC study partners) USI, APHP, TOHOKU, INRCA,	Relationship between users and devices as a companion	Human movement and loneliness score (UCLA)	frequency of the use and enablers and barriers for this	User preferences, personalization of design, and detection of new features
Watanabe et al. (all POC partners= IGOU, TOHOKU, INRCA, CARITAS,	Observational study. Trend of current older adults in health and technology are explored in EU and JP.	Screening and TO data of the Primary and secondary output	POC baseline and screening data	Factors affecting health domain Factors affecting e-literacy and technology use Factors related to physical activity
Napolitano et al. (all WP5 partners) INFAI, TOHOKU, AIST	What are they talking about ? What dialogue was useful and which was not working.	Dialogue data extracted from the POC in EU and JP.	POC dialogue in JP and EU.	This paper will be an important determinant of future dialogue system development.
Szameitat et al. (all EU partners) USI, SHIBAURA, WASEDA	Use of religious robots in different settings and cultures	Qual. Study in Germany and EU about <u>Celeste</u>	More Content and Interaction related	New insights into the potential use of religious robots in community-dwelling older adults
Yegang et al. (all JP partners) WASEDA, SHIBAURA, TOHOKU,	Use of religious robots in different settings and cultures	Qual. Study in Japan about <u>Daruma</u>	More Content and Interaction related	New insights into the potential use of religious robots in community-dwelling older adults
Sansen et al. (IMT)	Fuzzy dates representation in Knowledge Graphs	A unique representation of dates to fit all the representation of dates in human minds	Fuzzy Logics processing on dates	Simplified internal Dates representation processing for usage in dialogue

Table: Planned **Secondary** publications based on POC.

Your name	Focus of the paper	Content related outcome	Tech related outcome	Expected result and how the result can be used in the future
McTear et al. IXP, InfAI, USI, AIST	Evaluation of a Large Language Model, LLM vs. NLU-based models	Which model works better for older adults for AHA topics in different countries	Differences between standard NLU and LLMs approaches	Refinement of natural language systems for the older adult user group
McTear et al. IXP, InfAI, USI, AIST	User evaluations of a virtual coach using NLU-based and LLM-based dialogue strategies	Human-centered analysis of the dialogue strategies of the virtual coach	Recommendation of a hybrid approach development	Pros and cons of the two approaches for the older adult user group
Ogawa et al. TOHOKU, USI	Relationship between social platform login and number of participation	Social activity level	Social platform login data	Address the question again if it is true that Higher the social platform use, higher the social activity level use of human coach support the activity level more than the social app. What are the lacking point of the social platform functionality can be a future topics.
Ogawa et al. TOHOKU, USI	What factor influences good balanced diet	FFQ related outcomes of the POC study	Physical, mental parameters, wearable data	Eating habit is related to measurable outcome. In the future such measurable parameters can be used to motivate for better balanced food eating.
Jahn et al. USI, TOHOKU	Use of an avatar in the night watch to reassure residents with dementia and support the staff.	Qualitative and quantitative Data, Interviews	Use of the MODI camera, reaction to a human-like avatar	Technical options to minimize the tendency to run away

<p>Hariz et al. IMT, UNIVPM, ENG, DELTADORE</p>	<p>Multimodal data fusion for user contextual information and state estimation</p>	<p>User's ADL follow-up, distress situations anticipation and detection, user's context awareness</p>	<p>Data fusion, data processing and pattern recognition</p>	<p>Improve the performance of HAR and User's context identification in particular for more relevant dialogues scenarios triggering.</p>
<p>Sansen et al. (IMT)</p>	<p>Mobile Smartphone Voice interactive with oriented-dialogue management</p>	<p>Offering a similar services as e-VITA but at reduced complexity</p>	<p>Speech processing functionalities, Knowledge graph oriented</p>	<p>Standalone device and edge computing-compliant</p>
<p>Tevisen et al. (IMT)</p>	<p>Textual Speaker Change Point Detection using Large Language Models</p>	<p>Speaker diarization applied to User's recognition</p>	<p>Speech processing and Deep Neural Networks models</p>	<p>Targets at a better User's separation from the audio scene and consequently Dialogue performance, in particular with Robots interfaces.</p>

4. Conclusion

Deliverable D9.5 was concerned with the Final scientific dissemination reporting for the whole e-VITA Consortium in Japan and in Europe. Previously described in the previous deliverable D9.1 (Initial plan) and D9.4 (mid-term report and plan), the objectives were to organize and to implement a methodology for the scientific dissemination including research workshops, webinars and plans for publications in conferences with peer-review as well as submission of articles to journals and to report regularly on the situation of published, submitted and draft papers.

In comparison to the mid-term period (last up-date at M18), there was a substantial acceleration of papers publications, going from 18 papers at M18 to 42 papers at M39 and potentially going to the targeted KPI for as well Journals as Conference publications in a whole compared to the Global KPI of 50, with a quite good balance between journals and conferences levels with regard to their respective KPI (20 and 30).

Nevertheless, as perspectives beyond the e-VITA project, the e-VITA Consortium has planned to pursue a collaborative conferences and journals publications and concrete publications planning are already identified at this step.