

**EU-JAPAN VIRTUAL COACH FOR SMART AGEING**




**Project Summary**  
2021-2023


A European (H2020) and Japanese (MIC) funded project  
on Smart Living Support for the Ageing Society

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## Partner overview

Geographical distribution



**Dioresan-**  
Caritasverband für das  
Erzbistum Köln e. V.

**Fraunhofer**  
IAIS

**ixp**  
Institute of experimental  
psychology

**UNIVERSITÄT SIEGEN**

**InfAI**  
Institut für Angewandte Informatik

**AGE**  
Platform Europe

**IMT**  
Institut Mines-Télécom


**DELTA DORE**

**ASSISTANCE PUBLIQUE HÔPITALUX DE PARIS**

**ENGINEERING**

**UNIVERSITÄT SIEGEN**

**UNIVERSITÄT SIEGEN**



**RIETP**

**NeU**

**MISAWA**

**東京大学 老年学総合研究所**

**JGA**

**AIST**

**HAIRC**

**Gatebox**

**AIRC**

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## Project - Objectives

Socio-Technical System with Robots, Smart Devices and Trustworthy AI



- **Objective 1:** Develop a set of standards and norms for interoperability of advanced IoT, NLP and AI based smart living technology in Europe and Japan
- **Objective 2:** Develop an advanced intercultural virtual coach with seamless integration of smart living technologies, advanced AI and tailored dialogue interaction
- **Objective 3:** Enable smart living support and tailored AHA interventions for physical, cognitive, emotional, and social wellbeing of older adults in real-life settings in Europe & Japan
- **Objective 4:** Propose and design practice-based ICT tools to empower older adults to experience ageing as a positive process and meaningful period of life
- **Objective 5:** Conduct a proof of concept study to assess user acceptance in real-life environments from different countries and cultural backgrounds (EU/JP)
- **Objective 6:** Explore the feasibility of a new ecosystem for disruptive innovations of AHA coaching and incubation of SMEs and NGOs in Europe and Japan

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## Project - Impacts

Societies, science, industry and health



- Independent living, and improved quality of life of older persons compared to the current State of the Art
- Usefulness and effectiveness of personalized recommendations and follow-up in terms of goals of preserving physical, cognitive, mental and social wellbeing for as long as possible
- Evidence of user-centred design and innovation, effective ways of human computer interaction, and user acceptance
- Fostering social participation and reducing social exclusion's risks of older adults
- Validation of non-obtrusive technology for physical, cognitive, social and mental wellbeing
- Strengthened international cooperation in research and innovation on Smart Living for AHA

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## Needs-based approach

Target variable well-being







**Autonomy**  
»I can do what I want the way I want it«



**Security**  
»I'm safe from threats and uncertainties«



**Competence**  
»I'm good in what I do«



**Stimulation**  
»I was experiencing new activities«



**Relatedness**  
»I feel close to the people I care about«



**Physicalness**  
»That my body was getting just what it needed«



**Popularity**  
»I have impact on what others do«






**Meaning**  
»I feel a sense of deeper purpose in life«

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## System Overview

Socio-Informatics System


### USER, AGENTS & ACTORS



**EMBODIMENT**  
3D-Hologram, Robots, Emotional Devices

↑


**DIALOGUE SYSTEM**  
Conversational AI & Natural Language Processing (NLP)



↓

↑

**FEDERATED DATA & TRUSTWORTHY AI**



↓

**COMMUNITY SUPPORT**  
Social Care Workers, Elderly Clubs, Neighborhood, Students, Volunteers

### FUNCTIONALITY (AREAS OF SUPPORT)

Social Networking

Physical Activity & Diet

Cognitive Function

Risk Avoidance

Leisure & Wellness

Spirituality

**Smart Living Environment**

Voice, Face and Gesture Recognition	AHA Intervention + Monitoring
Emotion, Distress Detection and Social Computing	Smart Devices, Sensor Systems Wearables, Third parties' APIs

Daily Feedback / Q&A

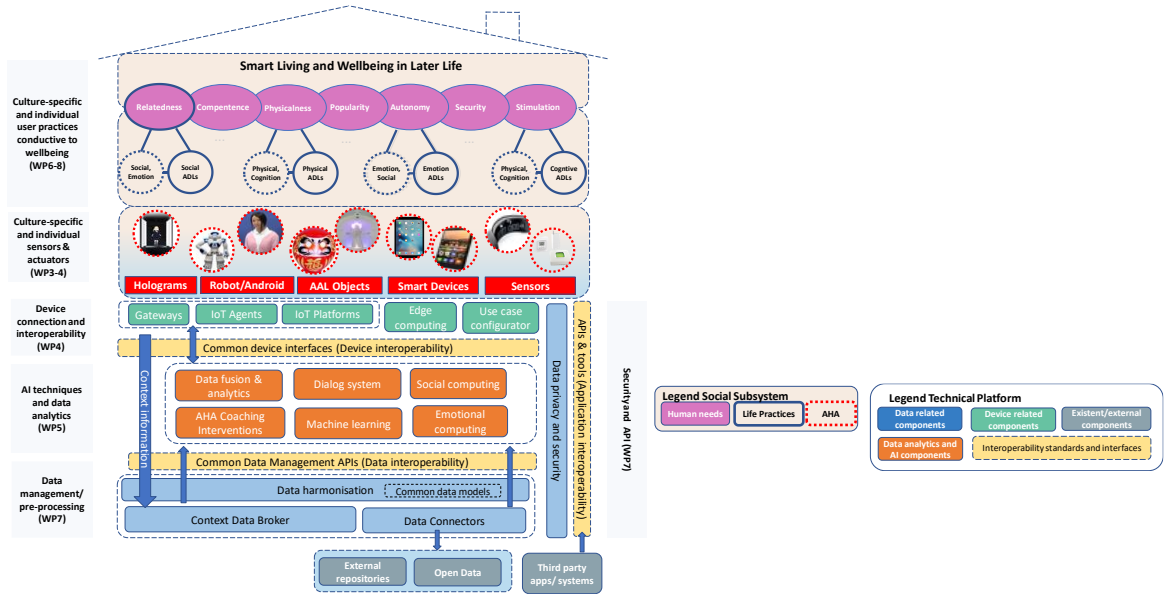
Support & Training

Alerts and Periodic Reports



# Technical Architecture

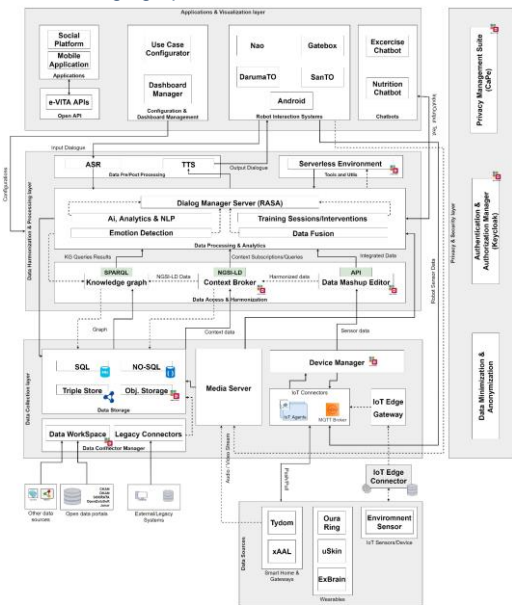
Knowledge graphs, Conversational AI & Machine Learning



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# Smart and Natural Interaction

Knowledge graphs, Conversational AI & Machine Learning



The e-VITA architecture combines the Digital Enabler modules with the different components.

The user's speech, collected by the coaching device microphone, goes through "ASR" to "Dialog Manager". "Data Harmonization & Processing Layer", centered on "Dialog Manager", decides what action to take based on the user's speech, and the response from the system is communicated to the user via "TTS", together with/or coaching contents.

In "Data Collection Layer", data is collected and processed to enrich the coaching content. The data may be anonymized and processed as big data, or it may be linked to a person's ID to create personalized content.

Data acquired from sensors is also input to "Data collection Layer" and processed as input data as well as user speech.

Privacy and data security are two of the key issues in the e-VITA project, and they concern all layers, which are shown in the rightmost block in this diagram. Detailed descriptions of each layer are provided in the following section.

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## Intelligent devices

Shape of the assistant



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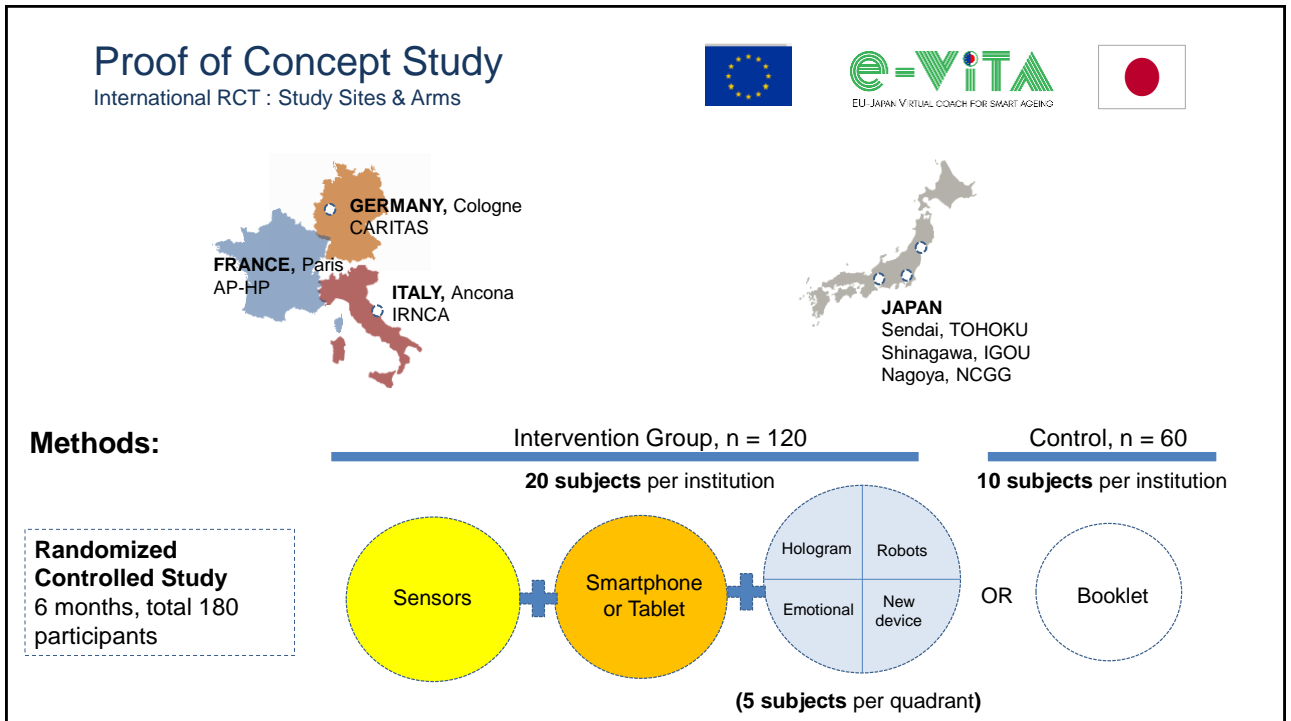
## Milestones

Project Timing

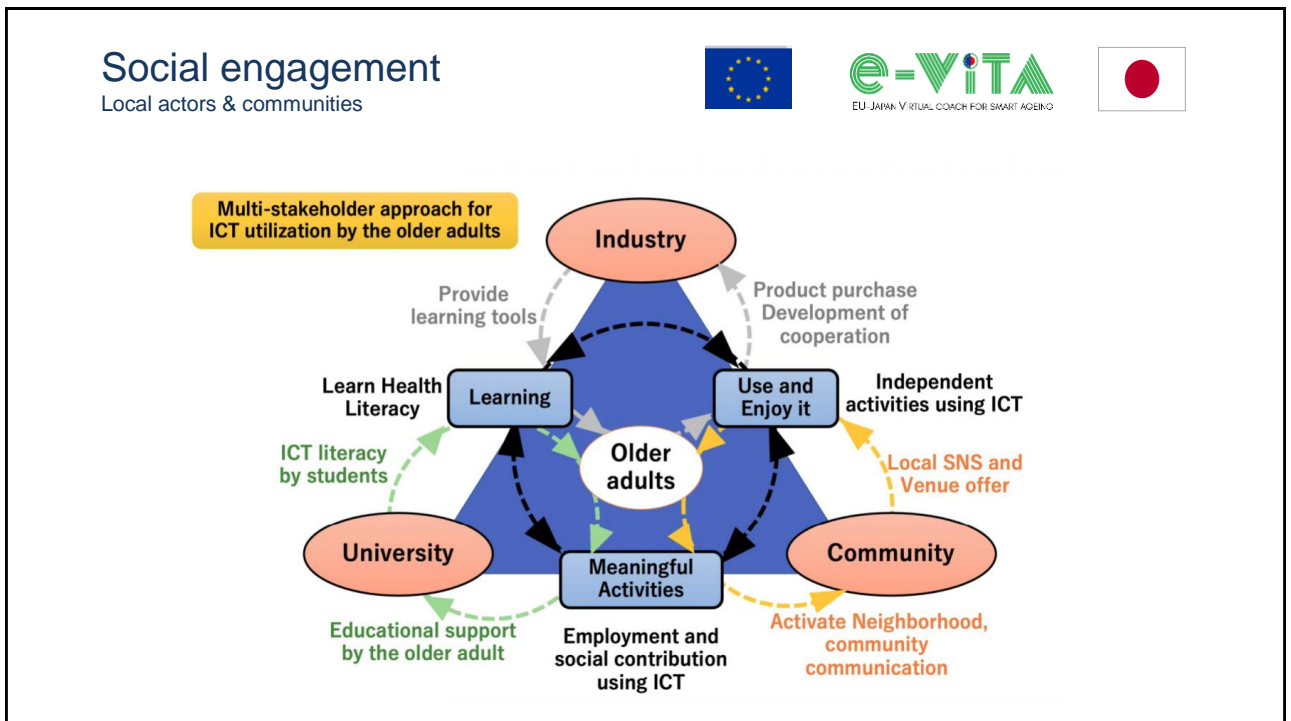


		Year 1 (2021)	Year 2 (2022)	Year 3 (2023)
M6	Pre-Study	█		
M15	Prototype		█	
M18	Pilot		█	
M27	Re-Design		█	
M33	POC			█
M36	Analysis			█

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## Project - Contacts

Project offices in Europe and Japan



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