COMFORTage

Prediction, monitoring and personalized recommendations for prevention and relief of dementia and frailty

Funded by the European Union

Aris Tsitiridis, PhD
UBITECH, Greece

COMFORTage

Prediction, monitoring and personalized recommendations for prevention and relief of dementia and frailty

www.comfortage.eu

PARTNERS-CONSORTIUM

RESEARCH CENTERS (8)

UNIVERSITY OF PIRAEUS RESEARCH CENTER

Cyprus University of Technology — Department of Electrical Engineering and Computer Engineering and Informatics

UNIVERSITY OF PATRAS

ARISTOTLE UNIVERSITY OF THESSALONIKI

NTNU

TILBURG UNIVERSITY

CERTH CENTRE FOR RESEARCH & TECHNOLOGY HELLAS

Fraunhofer ITWM

HEALTHCARE ACTORS & POLICY MAKERS (11)

Gemelli — Fondazione Policlinico Universitario Agostino Gemelli IRCCS Università Cattolica del Sacro Cuore

ANA ASLAN INTERNATIONAL FOUNDATION

HELLENIC REPUBLIC National and Kapodistrian University of Athens

DMH Gemelli Digital Medicine & Health — YOUR REAL WORLD KNOWLEDGE COMPANY

UNIVERZA V LJUBLJANI University of Ljubljana

EHTEL

MANCHESTER 1824 The University of Manchester

ASL ROMA 1

ace alzheimer center BARCELONA

THE CYPRUS INSTITUTE OF NEUROLOGY & GENETICS

MEDICAL UNIVERSITY OF LUBLIN

SSH & LEGAL (4)

WHITE

Q-PLAN INTERNATIONAL

ZAVOD VSESORTE narava in zdravje

CyberEthicsLab.

LARGE INDUSTRY (2)

GROUP Maggioli

ebit an Esaote Group Company

SME INDUSTRY (10)

(eHealth, AI/AAL & Blockchain)

UBITECH ubiquitous solutions

stremble

MCS DATALABS

LEANCALE

NewCo.

onmi

INNOVATION SPRINT

ROPARDO

amistim

itml innovation applied

NETWORKS & ASSOCIATIONS (4)

Salut/ TIC Salut Social

Generalitat de Catalunya

RSCN REFERENCE SITE COLLABORATIVE NETWORK

FUNDACIÓN intras

AEPAN CITY NETWORK

What is COMFORTage?

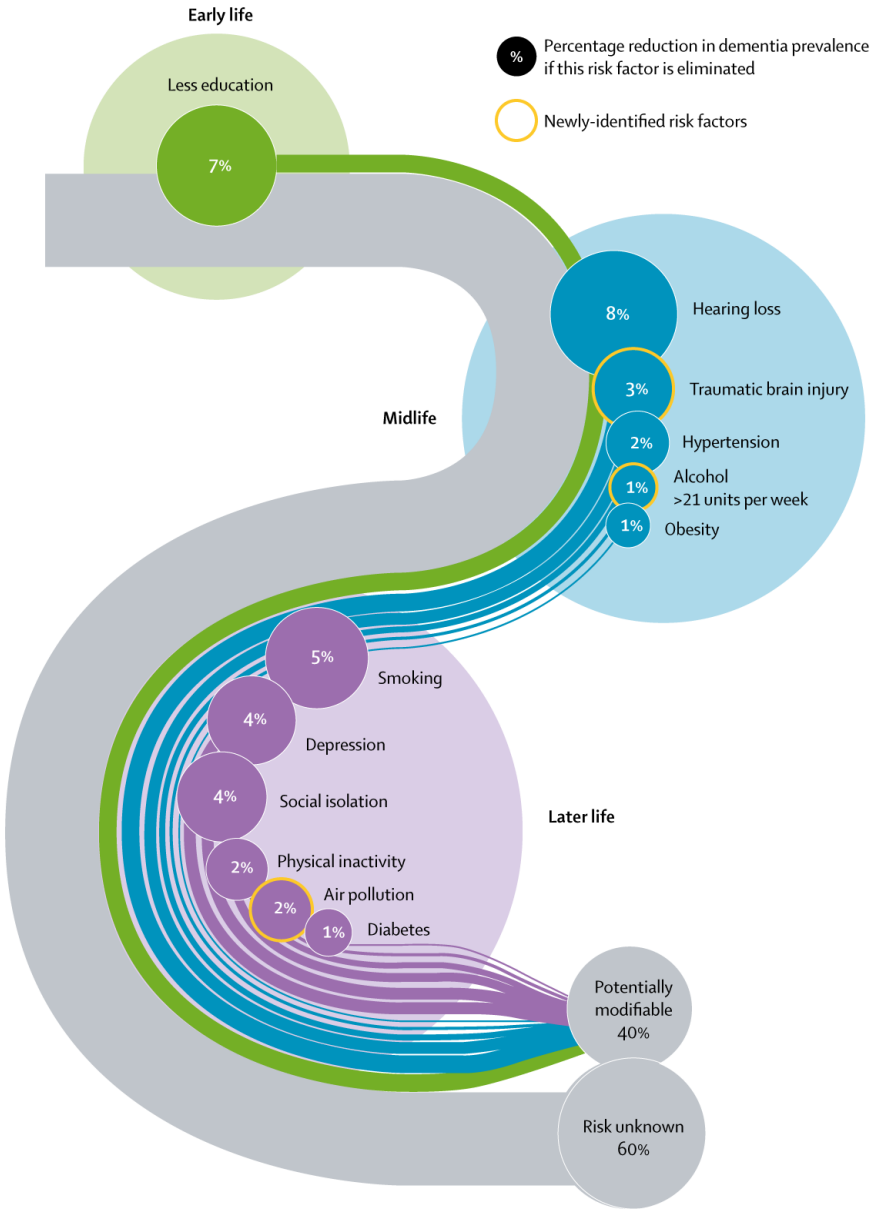
Multidisciplinary approach and joint-effort of 39 organizations from 12 countries

Deliver personalised care for age-related diseases, promoting healthy aging and reducing healthcare disparities across Europe.

- **Investigate, develop and evaluate** complex challenges of aging such as AD, dementia and frailty, combining clinical expertise, technological innovation and community engagement.
- **Establish a pan-European framework** for community-based prevention and intervention strategies.

Risk factors for dementia

Up to 12 potentially modifiable risk factors account for 40% of dementias worldwide



Livingston G, Huntley J, Sommerlad A, et al. Dementia prevention, intervention, and care: 2020 report of the *Lancet* Commission. *The Lancet* 2020.

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Use cases

Cluster A

Casual Risk Factors Towards Early Diagnosis and Community Based Primary Prevention of Dementia

Cluster B

Association between the development of dementia and other health-related conditions.

Cluster C

Study of Improved and Personalised Interventions that can delay and relieve Dementia.

Cluster D

Study of Neuromechanics and Falls prevention.

Cluster E

Active Ageing Observatory: Study of Digital Innovation Hubs and Living Labs for improving wellbeing and QoL.

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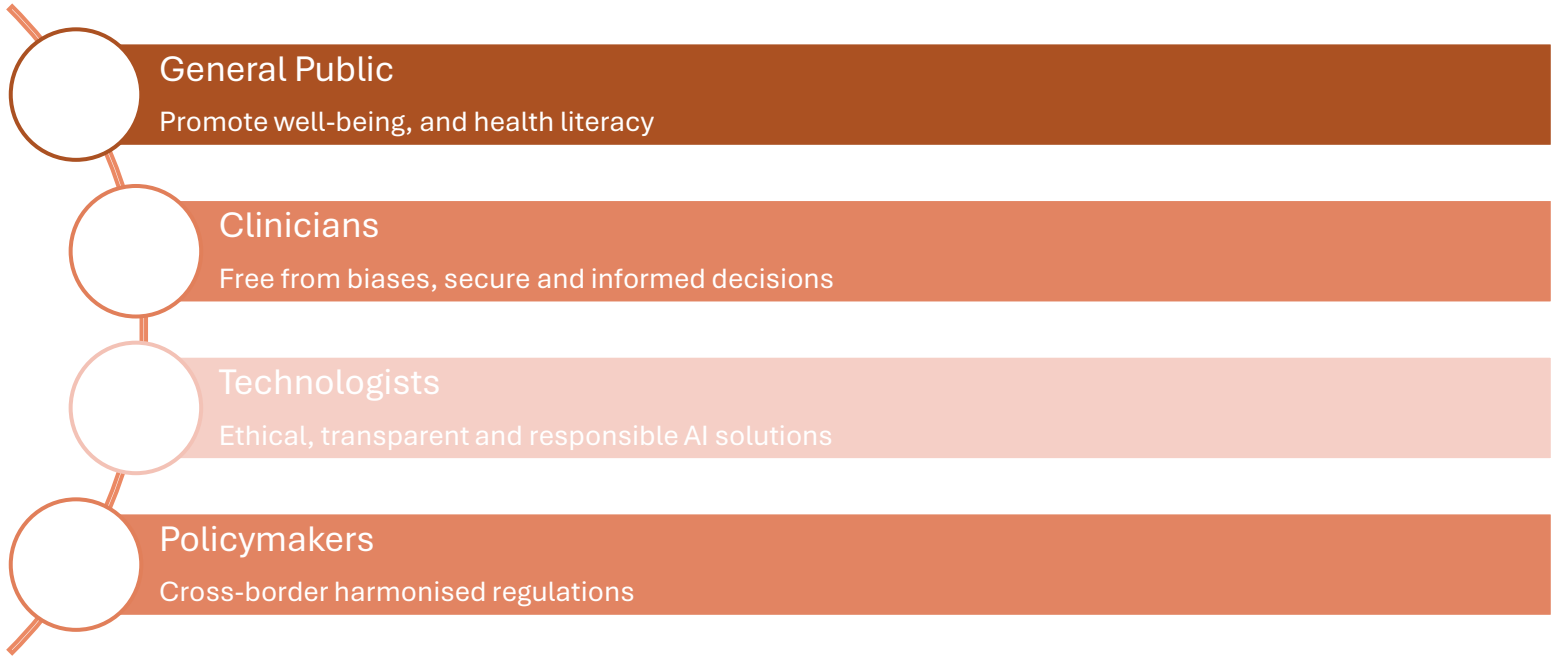
Objectives

1. PROMOTING A HOLISTIC DIGITAL CARE PATHWAY
2. PRIMARY AND COMMUNITY-BASED HEALTH AND CARE SERVICES
3. PREVENTIVE AND INTEGRATED CARE MODELS
4. EVIDENCE-BASED HEALTH POLICIES
5. EMPOWERMENT & IMPROVEMENT OF HEALTH AND DIGITAL LITERACY
6. DEMONSTRATING COST-EFFECTIVENESS

COMOFTage Vision

“Make healthy ageing achievable for all Europeans by bringing cutting-edge AI to personalised care.”



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Project's Main Challenges

01 *Diverse data sources*

02 *Person-centred & community-based healthcare*

03 *Educational & Virtualised AI-Based Healthcare Platform*

04 *Health & Social Innovation*

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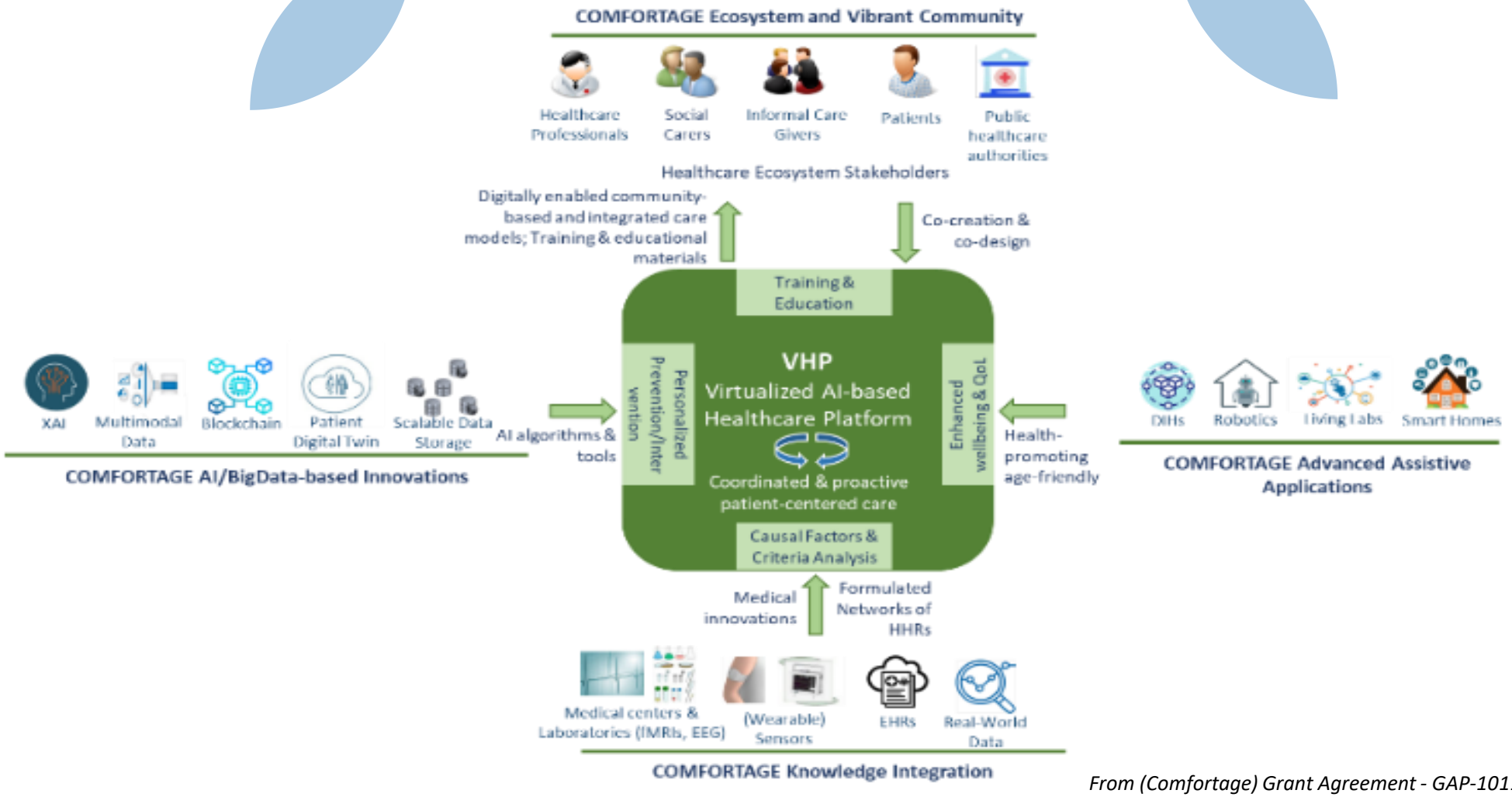
Multidisciplinary approach



From (Comfortage) Grant Agreement - GAP-101137301

AI innovations

Multimodal analysis & forecasting

01

02

Digital twins Virtual Assistant

Living Labs

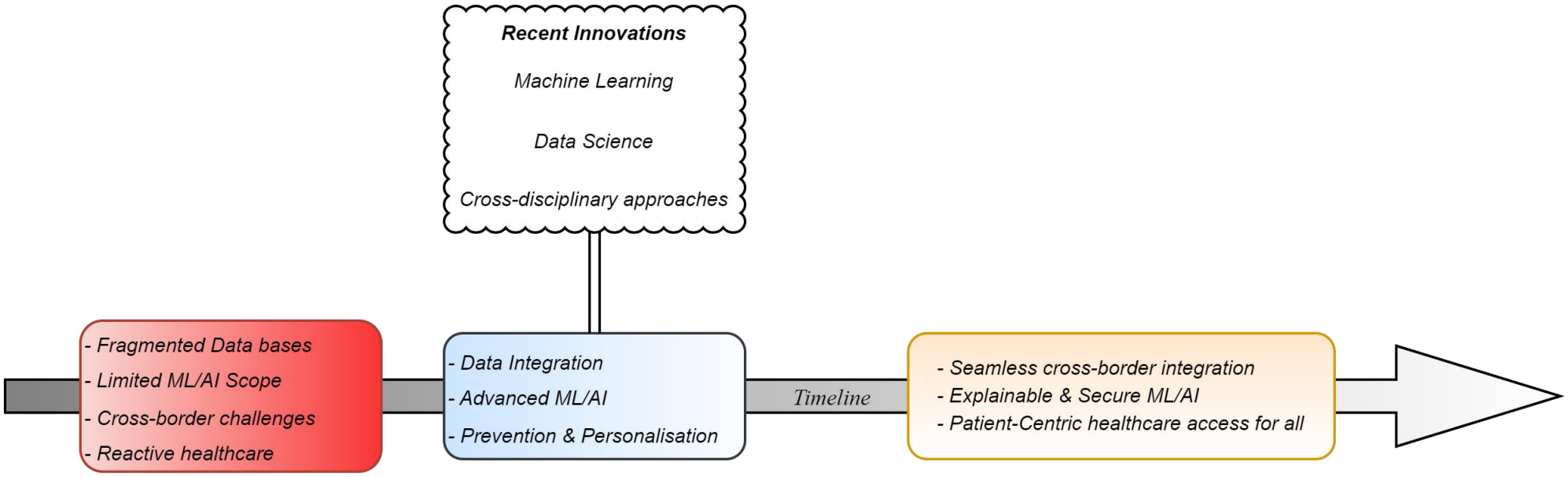
04

03

An educational AI-Based Healthcare Platform

Multimodal Systems

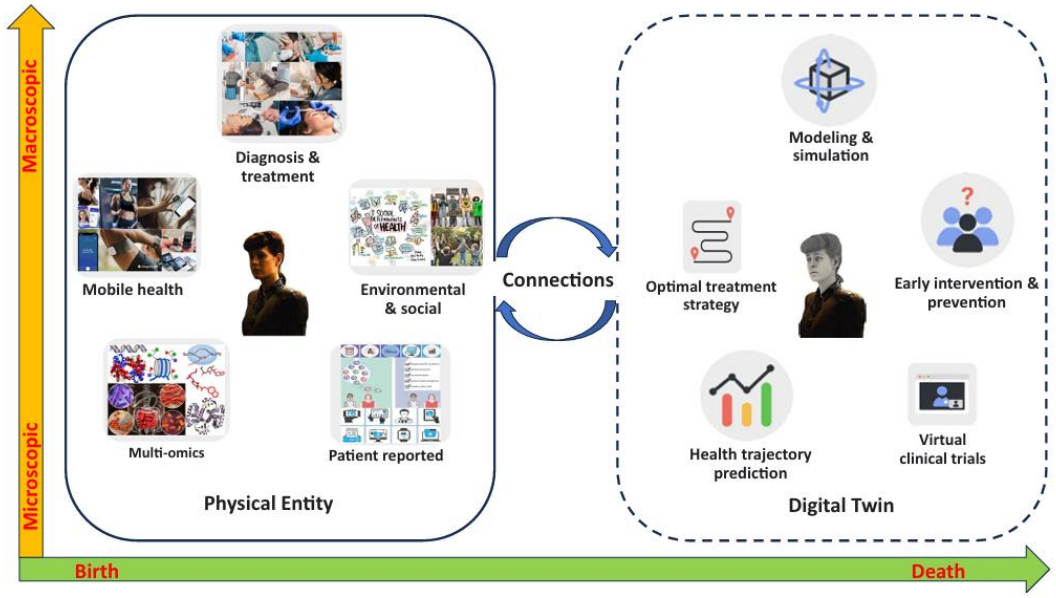
Process diverse data types, revealing hidden relationships across data domains for more precise and comprehensive insights



COMFORTage Digital Twin

A virtual replica of a patient, enabling real-time simulation and personalised care by integrating data from multiple sources.

Digital twins for health: a scoping review, Katsoulakis et al, npj - digital medicine, 2024



Key Features

1. Virtual Health Replica
2. Advanced Simulations
3. Personalised Care

Expected impact

1. Proactive Healthcare
2. Empowered Stakeholders
3. Cross-Border Integration

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Robust Foundations

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THANKS

For your attention

Ask us everything
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COMFORTage

feedback loop
continuous learning

Leading primary data sources
Extensive Research Analysis and implementation of AI & Learning Models

Personalized Prediction & Prevetion
Improved AI Models for Personalization
Patients' stratification based on personalized prognosis of the disease progression

Healthcare Decision Support
ICML, DSS

Continuous Improved Care
People-Centric Assistive Applications
Caliberation of AI Models and implementation of advanced AI techniques to address the impact of targeted decision support

Monitoring and Follow-Up
Smart homes, robotic and virtual systems, Ambient Intelligence, Serious Games

Risk Factor Analysis → **Patient Stratification & Risk Identification** → **Personalised Treatment and Care Plans** → **Continous Risk Assessment** → **Complete health status monitoring**

Processing large amount of historic medical records to develop personalized conditions and factors that relate to highest likelihood of developing dementia

Targeted prevention measures and interventions are designed against specific factors to be delivered through COMFORTage solutions

The patients will be monitored using various appropriate devices, such as wearables, smart devices in their different environments connected with IoT and integrated with AI

KEY PILLARS

1

DIGITAL HEALTH EUROPE

Integrating and positioning the project into the Digital Health Europe (DHE) and engaging it with European Healthcare Communities

2

EUROPEAN HEALTH DATA SPACE

Fostering innovation on integrated health records through the adoption of Holistic Health Records (HHRs) and integrate the project´s Ageing-EHDS with the European Health Data Space (EHDS)

3

INTEGRATED PLATFORM

Development of a Virtualized AI-Based Healthcare Platform (VHP) to centralize AI resources for risk factor analysis, early diagnosis, and personalized decision-making

4

EMPOWERED AND IMPROVED HEALTH & DIGITAL LITERACY

Establishment of a hybrid user-centric training and educational toolkit to raise the awareness and engagement of the patients with their HCPs and care providers

5

SOCIOECONOMICAL IMPACT ASSESSMENT

Showcasing socioeconomical benefits of the digitally enabled community-based care plans

6

GENERAL PUBLIC

Enhancing trust of the general public, healthcare organizations and SMEs