

# SUPPORT2LIVE: WEARABLE SENSORS, ANALYTICS AND THE WEAREFAMILY APP FOR ASSISTED LIVING WITH DEMENTIA

L. Mpaltadoros\*, T. G. Stavropoulos\*, I. Lazarou\*, V. Alepopoulos\*, S. Nikolopoulos\*, V. Ganosi\*\*, C. Bourlis\*\*, M. Tsolaki\*\*\* and I. Kompatsiaris\*

\* Information Technologies Institute (ITI), CERTH, Thessaloniki, Greece

\*\* ARX.net, Thessaloniki, Greece

\*\*\* 1st Department of Neurology, Medical School, Aristotle University of Thessaloniki  
{lamprospalt, athstavr, iouliettalaz, valep, nikolopo, ikom}@iti.gr

## Introduction

Identifying daily changes in Alzheimer's Disease (AD) spectrum is a challengeable research target especially in preclinical stages of AD, the so-called Subjective Cognitive Decline (SCD) and Mild Cognitive Decline (MCI). Mobile technologies [1] coupled with wearables and the Internet of Things (IoT) [2] allow timely and objective monitoring that may facilitate early cognitive impairment, aiding patients, caregivers and clinicians. The support2LIVE project [3] aims to integrate wearable devices and smartphone apps to support timely assessment and intervention for elders in the spectrum of dementia (Figure 1). This study presents the support2LIVE approach to integrate a user-friendly mHealth app to ameliorate cognitive disturbances and empower elders, and a unified platform for data collection, analysis and monitoring.

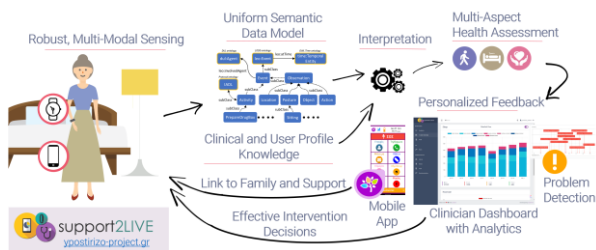


Figure 1. The support2LIVE Project Architecture

## WeAreFamily Mobile App

In support2LIVE, we introduce a commercial family support app developed by ARX.net, the WeAreFamily (WAF) Mobile App, tailored to support elders. It supports calls and messages, notifications in case of emergency and monitoring of the location of the elderly. It includes medication notifications and a series of brain games for enhancing cognitive functions.

## Data Collection and Analysis in the CARL Platform

In addition to WAF, the wearable sensor data are integrated into CERTH's CARL platform (Care Ally: Data Collection & Analysis Platform for Assisted Living), an end-to-end data collection and analysis platform offering: 1) integration with continuously expandable list of commercial wearable and IoT sensors and apps; 2) rule-based analytics for feature extraction and detection of clinically-relevant behaviors and symptoms; 3) visualization dashboard for clinicians to

enable operational and clinical oversight across the entire lifespan of a trial, and informed decision-making.

## Conclusion

The support2LIVE project offers a holistic, integrated system to support independent living for the elderly using the CARL platform for data collection and analytics and the WAF app to keep patients, carers and clinicians in the loop. Clinical pilots concluded with 49 participants in Greece will explore statistically significant differences between Healthy Control (HC), SCD, MCI and AD to discover associations between cognitive state and daily life behavior and activity.

## References

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## Keywords:

Alzheimer's Disease, Dementia, Wearables, Mild Cognitive Impairment, Assisted Living, mHealth

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