SHAPES

Smart and Healthy Ageing through People Engaging in Supportive Systems

The **SHAPES Project** aims to create an open platform for healthy and independent living addressed to older persons who face reduced functionality and capabilities. The project is building, piloting, and deploying a wide range of technological, organisational, clinical, educational, and social solutions on a large-scale.

The **SHAPES Digital Solutions** cover multiple areas including IoT and Big data Platforms, online communication and accessibility tools, cognitive stimulation and rehabilitation, conversational assistants and chatbots, solutions based on robotics, health and wellbeing platforms, solutions to ensure security, COVID-19 response tools as well as solutions in data analytics, such as predictive systems and wellbeing assessment tools. Discover some of the digital solutions being developed in the **SHAPES project**:

★ Pilot Site Leader
● Replicating Sites
▮ SHAPES Partners

UK
eCare (EDGE) ●

DE
Videocall solution (MedSyn) ★
eCare (EDGE) ●
NewSum (SciFY) ●
Kompaï-3 Robot (KOM) ●

CZ
Medimonitor (FNOL) ★
DanceMove (UAVR) ●
eCare (EDGE) ●

PT
eCare (EDGE) ★
DanceMove (UAVR) ★
Phyx.io (UCLM) ●

ES
ARI Robot (PAL) ★
Phyx.io (UCLM) ★
eCare (EDGE) ●
Kompaï-3 Robot (KOM) ●

IT
ARI Robot (PAL) ●
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EL
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Kompaï-3 Robot (KOM) ●
Phyx.io (UCLM) ●

FR
Kompaï-3 Robot (KOM) ★

CY
eCare (EDGE) ●

eCare – Personalised Care Intelligence Platform
EDGENEERING (EDGE), Portugal

eCare is **EDGE**'s personalised ambient intelligence platform that collects and integrates well-being, quality of life and environmental data, empowering individuals to create smart living environments that promote healthy lifestyles and independent living conditions.

Individuals interact with the friendly **eCare App** that enables an easy manual or automatic collection of health and wellbeing parameters, using connected health and medical devices and wearables. Also, the **eCare App** allows individuals to answer simple and short questionnaires and feedback forms on symptoms, medication adherence, nutrition and diet, psychological state and quality of life.

The **eCare Platform** is now supporting the **SHAPES large-scale pilot campaign** that, throughout 24 months, involves 15 hospitals, clinics, nursing homes and home care in 10 European countries and more than 2000 people.

eCare – Personalised Care Intelligence Platform
## EDGENEERING (EDGE), Portugal

Developed by **EDGE**'s team, adapted versions of the **eCare Platform** give live to five different pilots exploring the non-invasive monitoring of physiological, psychological and wellbeing parameters and enabling older people to be involved in the decision-making of their own care, reinforcing prevention and the self-management of chronic diseases.

At the same time, healthcare professionals are able to define adequate care plans, adjust it as needed based on up-to-date information and monitor the individuals' adherence to the defined care plan. With a focus on the setup of smart living environments, on the monitoring of key health and wellbeing parameters, on the control and optimisation of medication intake and on the application of dance to stimulate cognition, the **eCare Platform** will thus contribute to support and extend the autonomy and independency of older people at home settings.

Phyx.io
University of Castilla-La Mancha (UCLM), Spain

Phyx.io is a tool developed by the **University of Castilla-La Mancha**, specifically devoted to support remote rehabilitation processes. The system can run in different setups (TV-based kiosk or using a smart mirror device).

Phyx.io provides an information system in which all data related to the rehabilitation process is being managed. This involves the different roles that participate in the rehabilitation process, such as the healthcare facility, the physiotherapist, or the patient. This also involves the exercise routine prescribed to the patient along with the data regarding the performance achieved in each session. This data enables physiotherapists to assess, in a more quantitative manner, the evolution of each patient. It also helps evaluate the patient adherence to the program. Furthermore, feedback is provided to the users while performing the exercises.
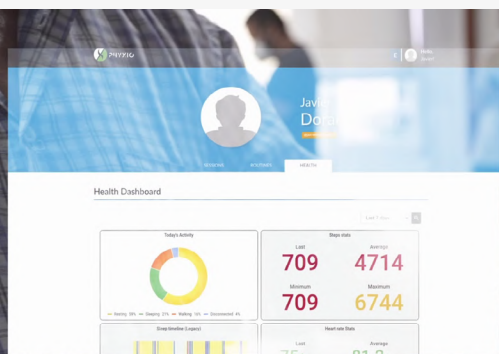
Phyx.io
University of Castilla-La Mancha (UCLM), Spain

Phyx.io is equipped with its own video call integrated into the system. The user can contact his or her physiotherapist, if necessary, with just one touch on the screen. **Phyx.io** also integrates the use of smart bands and enables and automatic mechanism to retrieve the information from a commercial smart band (e.g. Xiaomi MiBand 4), with a point-to-point connection avoiding the commercial cloud of the smart band vendor.

Data is incorporated into the user profile and can be accessed through the **Phyx.io** dashboard. In this way, both healthcare specialists and users can analyse, in a glimpse, some factors that determine the physical activity level such as the number of steps, calories burnt, heart rate, etc.

DanceMove
University of Aveiro (UAVR), Portugal

DanceMove is a digital solution developed by the **University of Aveiro** that includes a dancing surface and associated software that allows for the personalisation of dance choreographies while assessing the user's performance during the choreography.

DanceMove allows for the choice of music and difficulty level in line with users' preferences and characteristics.

To play **DanceMove**, the user performs a specific movement in a specific sequence as presented by the software by pressing the arrows on the mat. The player's performance is scored based on how accurately he or she can trigger the arrows in time.

DanceMove
University of Aveiro (UAVR), Portugal

Therefore, requiring the user's attention and memory, i.e., **DanceMove** integrates both a physical and a cognitive component into a ludic and appealing activity (dancing). The player's performance is scored based on how accurately he or she can trigger the arrows in time. If the player has an excellent or poor performance, the software triggers appropriate motivation messages.

DanceMove communicates with the **SHAPES platform** via eCare, which is a bidirectional interface that allows the users' login and the registration of personal and clinical data. An interchange protocol was developed, allowing **DanceMove** to store data in the eCare digital solution and eCare to import data on users' performance from the **DanceMove** database. The communication protocol uses HTTP to exchange messages.

ARI Robot
PAL Robotics (PAL), Spain

ARI robot was developed by **PAL Robotics** and is being used in different pilots of the **SHAPES project**. The robot is the perfect mix of Service Robotics and AI in one single platform.

ARI is a high-performance robotic platform designed for a wide range of multimodal expressive gestures and behavior, making it the ideal social robot and suitable for Human Robot Interaction, perception, cognition, navigation, and interaction. The robot's behavior can be customized using the easy-to-use web interface provided.

ARI can speak in many languages, recognize faces, make gestures, and show information/applications on the touchscreen on its chest for user interaction and multimedia content, as well as being fitted with a voice and facial recognition system. The robot can locate itself inside a building and move around while avoiding obstacles in its path.

ARI Robot
PAL Robotics (PAL), Spain

PAL Robotics' role is to integrate **ARI robots** with **SHAPES digital solutions** in order to develop a solution to promote healthy ageing in care-homes, and sheltered apartments in Greece, Italy and Spain.

ARI serves in **SHAPES project** as a companion robot to support healthy living of the older individuals, potentially carrying out tasks such as: help with mobility and/or rehabilitation exercises, engage in social activities. **ARI** is integrated with a chatbot, with different available languages, that can equip **ARI** with advanced natural language processing abilities providing health assessments, and encouraging users during cognitive games, reminding users to take medication, or give news, for instance.

Kompaï-3 EHPAD Robot
KOMPAÏ Robotics (KOM), France

Kompaï-3 EHPAD robot version, developed by **KOMPAÏ Robotics**, was designed to assist people with reduced functionality and capabilities and their caregivers. With the basic **Kompaï-3 EHPAD** version, the following function are proposed:

- Mobility assistance for residents;

- Tours (information, entertainment, night surveillance, etc.);

- Individual or collective distractions;

- Logistical capacities within the establishment, such as laundry or waste.

In SHAPES project, **KOMPAÏ Robotics** carries out the following tasks:

- Night surveillance in community care settings to regularly monitor residents who wander at night and to relieve caregivers of this non-added value task. Information tours, entertainment and individual or collective distractions are also available to be used during the day;

Kompaï-3 EHPAD Robot
KOMPAÏ Robotics (KOM), France

● Night surveillance in home care settings: the robot monitors the person's movements at night, offers help (lighting the way, accompanying the person to a specific place) and alerts the family or a monitoring platform in the event of a problem (fall, no habitual movement of the person in his or her home).

Furthermore, **KOMPAÏ Robotics** proposes to evaluate the the rehabilitation of walking in people who have lost their mobility following a stroke, accident or other. The guided walking function proposed by the **Kompaï-3 EHPAD robot** will be used for this purpose.

These digital solutions are integrated to the **SHAPES platform** for the authentication phase and the storage of data collected in the Datalake through ASAPA and Symbiote.

NewSum Mobile Application
SciFY - Science For You (SciFY), Greece

NewSum, **SciFY**'s app, automatically summarises information from many sources and combines them in a single text. With the use of artificial intelligence technology, the application gives the main points of all the different information that one would get if one would read all the articles from the sources visited.

Besides news on Europe, business, technology and more, **NewSum** offers short summaries of news on active aging, linking to the original source if the users want to read more. The app is an open-source project, is offered for free without ads and is available in English and in Greek on Android phones.
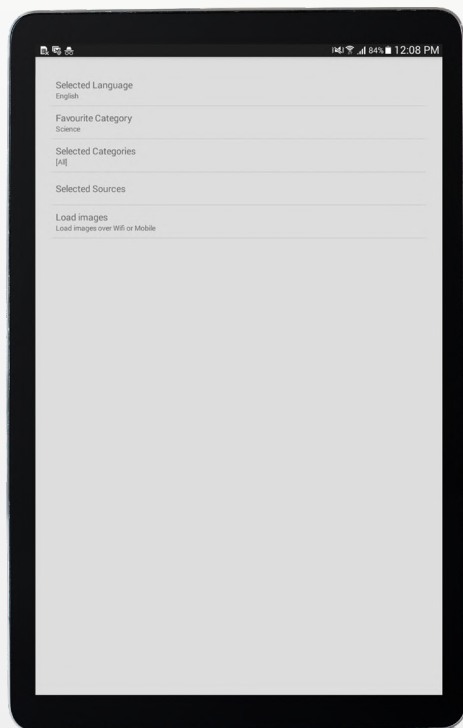
NewSum Mobile Application
SciFY - Science For You (SciFY), Greece

The user can choose from a multitude of news categories; view news from each category, which has been collected from multiple sources and summarized by AI; click on an article and see the summary; see the sources that were used for each report; share the summary on social media; select favourite news categories; and select which news sources they would like to receive news from.

NewSum offers **SHAPES** users something more than getting up to date. Older users gain pluralism in reading the news. What is more, having a dedicated section on active aging offers them more value.

Videocall Solution
MedicalSyn (MedSyn), Germany

Especially in times like the COVID-19 pandemic, it can be advantageous for older people to be able to attend the next doctor's appointment not on site but via video consultation. In addition, there is growing evidence in Germany that the acceptance of video consultations among the older people has increased significantly during the Corona Pandemic.

For that reason, older people shall be enabled to use a video call solution on a regular basis to foster their social interaction and communication. To address the needs of older people who live mostly alone and independently or with sporadic support in rural or urban environments the system is not only intended to be used between doctors and patients but also between older people and their relatives or care givers for example.

Videocall Solution
MedicalSyn (MedSyn), Germany

The **videocall solution** of **MedicalSyn** works with a two-screen display for bidirectional communication. It offers a contact list from which older people can reach their relatives with one click. Access to the system is kept very low-threshold in accordance with security and privacy regulations, to avoid potential barriers right from the beginning.
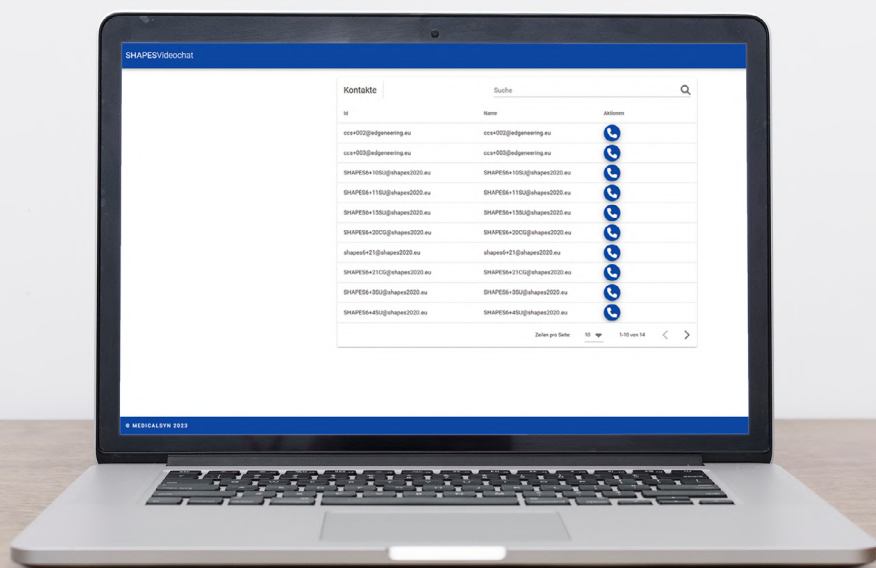

The **videocall solution** is a browser-based application. A concept for different roles and users with different rights and functionalities is implemented but can also be inactivated, if necessary. It will run in a responsive design for Desktop Computer, Tablet and Smartphone (Android and IOs). There is no App needed.

Telemedicine System Medimonitor
University Hospital Olomouc (FNOL), Czechia

Telemedicine System Medimonitor, developed by the **University Hospital Olomouc**, is a platform providing remote care assistance and monitoring of patients, and was specially developed for patients diagnosed with chronic heart failure and chronic obstructive pulmonary disease.

Medimonitor enables the collection of patients' health data, vital and physical signs as well as wellbeing and environmental parameters. The overall aim of the platform is to improve patients' quality life, and to reduce the risk of a deterioration of their condition.
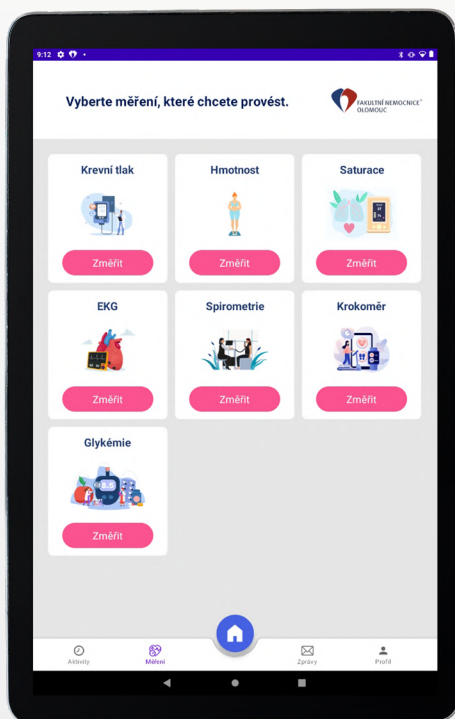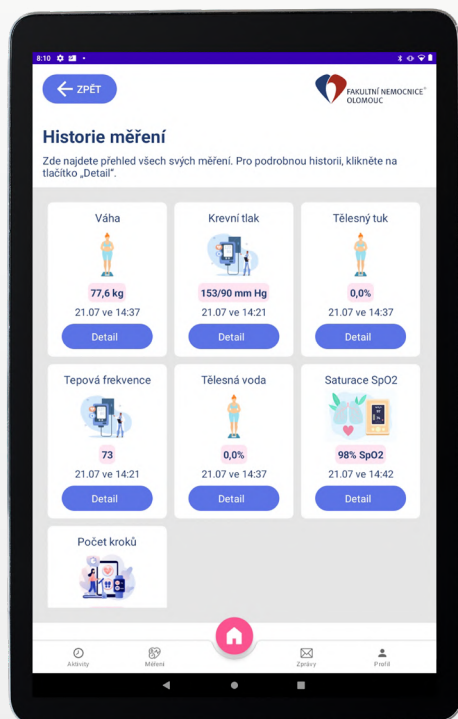
Telemedicine System Medimonitor
University Hospital Olomouc (FNOL), Czechia

Medimonitor enables the monitoring of the regional population who experiences chronic heart failure and chronic obstructive pulmonary disease. The practice provides tools for the remote monitoring of patients with advanced heart failure on standard medical therapy.

After collecting health data of 25 patients with heart failure and 25 patients with chronic obstructive pulmonary disease, in **SHAPES pilots**, observation data will be sent to the Datalake in FHIR format for further analysis. The interface uses ASAPA API for authentication – it obtains valid token for further communication. In addition, the data are sent and processed in third party technical solutions made by VICOMTECH® (VICOM) and Tree Technology® (TREE) to predict and prevent decompensations or exacerbations in heart failure and chronic obstructive pulmonary disease, respectively.

PROJECT DATA

PROGRAMME: H2020-EU.3.1.4.1. – Active Ageing, Independent and Assisted Living and H2020-EU.2.1.1.3. – Future Internet: Software, Hardware, Infrastructures, Technologies and Services

TYPE OF ACTION: Innovation Action

DURATION: 48 months (1 nov 2019 – 31 oct 2023)

PROJECT BUDGET: € 20.944.318,75

CONSORTIUM: 36 partners from 14 European countries

COORDINATOR: Maynooth University

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