GATEKEEPER PROJECT
THE OVERVIEW OF A MULTI CENTRIC LARGE-SCALE PILOT ON SMART LIVING ENVIRONMENTS
WHERE DOES IT COME FROM?
WHY IS IT A WINNING PROJECT?

NECESSITY: The large-scale deployment of integrated digital solutions which will bring improved quality of life to citizens while demonstrating significant efficiency gains in health and care delivery across Europe.

The flagship project of the EU to foster large-scale deployment of integrated digital solutions, mainly AI and Big Data, in the Health Care domain

For personalized risk detection, advanced health monitoring and early interventions

Across multiple scenarios of smart living environments
GATEKEEPER IN NUMBERS

- **43** partners
- **13** countries
- **21M€** Budgets
- **40k** individuals
- **9** medical pilots
- **7** Use cases for Chronic conditions
THE VISION OF A FEDERATED MULTICENTRIC APPROACH
GATEKEEPER LARGE SCALE PILOT EXPERIENCE
GATEKEEPER LSP will be a federation of multicentre longitudinal cohort studies, demonstrating the effectiveness and the cost-effectiveness of KET such as AI, big-data and IoT for the prevention of adverse events and the management of health in later life.

Each use-case protocol, approved by the local pilots’ ethical committees, will assure the maximal quality of the study while providing a pragmatic solution for the scaling-up of the GATEKEEPER technological solutions and business models in the respect of intrinsic differences which characterise partner Regions, Reference Sites and the communities they oversees.
Define, manage and execute the LSP activities in the different pilots’ sites

To establish and consolidate the different Reference Use Cases (RUC) through Europe

Enabling the deployment of digital solutions for early detection and intervention and support the risk stratification models
▪ Define a new paradigm for trial design and an innovative use of IoT, which will result in the generation of novel Real Word Data

▪ Enact a continuous improvement process based on feedback received

▪ Open to other RUCs (COV-SARS2 onset)
PILOT & RUC MAP

Lifestyle-related early detection and interventions

COPD exacerbations management

Diabetes: predictive modelling of glycemic status

Parkinson’s disease treatment Decision Support System

Predicting readmissions and decompensations in Heart Failure

Primary and secondary stroke prevention

Multi-chronic elderly patient management including polimedication

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement Nº 857223
Big Data Analytics techniques will be exploited to address risk stratification and early detection, based on lifestyles analysis.
REFERENCE USE CASE 2
COPD EXACERBATIONS MANAGEMENT

Machine learning methods based on Dynamic Bayesian Networks, suitable for modelling knowledge and handling time series data, are added to the Ecosystem Transaction Space to implement apps that predict exacerbations and avoid hospitalizations.
GK will provide a personalized, adaptive, real-time data driven computational solution based on data federation in the Healthcare Space, identifying the different modes of the underlying glucose metabolism and eventually prevention, of hypoglycaemic events.
REFERENCE USE CASE 4  
PARKINSON’S DISEASE TREATMENT DSS

GATEKEEPER KETs such as wearable sensors to continuously or periodically measure motor symptoms (depending on disease severity) and digital applications, such as Smart TVs, that can be used to detect non-motor symptoms are used to record data into the patient’s EHR, accessible in the GK Healthcare Space. The model will alert clinicians that the patient’s current medication plan is not optimal any more, and will derive suggestions on how to improve it.
Building on the experience of the Multisensor Monitoring in Congestive Heart Failure (MUSIC) Trial, GK Healthcare Space apps allow to explore which other longitudinal data (measured by GK Consumer Space “things”, e.g. bio-impedance, heart rate, respiratory rate and volume, physical activity duration and intensity, body posture, gathered with a wearable platform as the one depicted in can be used for predicting decompensations.
The GK Healthcare Space, will activate early warning alarms which effectively target secondary stroke prevention, particularly for subjects affected by recurrent strokes.
Through the GK Ecosystem Transaction Space, robotics KETs (from very simple pill dispensers to more complex social robots) can be integrated with digital coaching systems to assist polymedicated patients (e.g. in particular for patients which are concurrently affected by cognitive impairments).
GATEKEEPER TECHNICAL PLATFORM
AN OVERVIEW OF THE CURRENT STATUS
REFERENCE GATEKEEPER PLATFORM ARCHITECTURE

- Gatekeeper follows the W3C Web of Thing standard architecture that is based on FAIR principles -> Find, Access, Share and Compose WoT layers
- Gatekeeper is based on the implementation of digital twins. In Gatekeeper every asset, data or service is treated as a “Thing” and needs to provide a standard Thing Descriptor with JSON-LD annotation for its semantic models
- Gatekeeper improve the Web of Thing architecture with the CERTIFY layer. This layer is an additional non normative layer that certifies digital twins and its Thing Descriptors against the Gatekeeper governance rules implemented in the Gatekeeper Trust Authority (GTA). Every digital twin that is in line with these policies is certified by the authority.
- Gatekeeper fulfils with (7) creating an end user Marketplace application that facilitates transactions between users providing the consumer, healthcare and business space.
Gatekeeper follows the philosophy of an Infrastructure as a Code (IaaS) approach that grants the independence from any private cloud provider especially the “Big Tech Companies”

Gatekeeper implements the COMPOSE layer of WoT architecture. At high level we can imagine Gatekeeper as a set of interconnected Things like the “World Wide Web”. In this web, Things can be combined, added and linked each other though its Thing Descriptors.
Each component that want to be public need to provide a Thing Descriptor with a JSON-LD context that describes the semantic model it provides.
GATEKEEPER APPROACH TO A SUSTAINABLE BUSINESS
BUSINESS CLUSTER

▪ MISSION
  ▪ The mission of the Business Cluster is to conceive, design, formalise and set forth the Business Model and Exploitation Plan of GATEKEEPER to maximise the impact since the project start up with a time horizon of 5 years after the end.

▪ VISION
  ▪ GATEKEEPER is a game changer new parading on how doing compliant business in the health care sector

▪ APPROACH
  ▪ The Business Cluster is mission-target oriented activity that will direct (set objectives and KPIs), coordinate (harmonise actions and plans), and follow up (drive) the Task/Workpackages activities belonging to this cluster, towards the achievement of the goals.
THE GATEKEEPER MARKETPLACE

ECOSYSTEM CO-CREATION

ECOSYSTEM TRANSACTION SPACE

Open, trust-based marketplace for matching ideas, technologies, user needs and processes

BUSINESS SPACE

STANDARDIZATION STRATEGY

HEALTHCARE SPACE

CONSUMER SPACE

Health Care national/regional/local agencies

Health Care operators. Hospitals, service providers

Citizen / patients

Caregivers

Medical technology companies

SMEs

Consumer technology companies

Mental Health Care operators. Hospitals, service providers

Health Care national/regional/local agencies

Citizen / patients

Caregivers

Medical technology companies

SMEs

Consumer technology companies
ECOSYSTEM OBJECTIVE

ECOSYSTEM CREATION
- Build a **baseline** scenario to map stakeholders
- Initiate a prospective process to map **future trust and value scenarios** in relation to the new technology
- Involve **relevant stakeholders** in ecosystem co-creation

MANAGEMENT PLAN

ENLARGEMENT PLAN
GATEKEEPER Open Call provides an opportunity to technological SMEs and start-ups to locate their innovative solutions in our market with a large potential growth.

- Develop/implement **technology** to complement
- Develop **innovative services** based on AI available in GATEKEEPER
- Evaluate and validate the **functionalities** offered in GATEKEEPER through **new and existing use cases**
OPEN CALL 1
For involving BigData/Al ICT-related suppliers in the connected health and IOT smart living environments for ageing well domain, for evaluating and benchmarking their tools and mechanisms using GATEKEEPER technology, test beds, and data sets, and to evaluate the adequacy of GATEKEEPER to their domains.

OPEN CALL 2
For developing extended and new use cases based on the GATEKEEPER platform
ECOSYSTEM
OPEN CALL EVALUATION

EVALUATION CRITERIA

EXCELLENCE
IMPACT
IMPLEMENTATION
SUSTAINABILITY

EXPERT BOARD

CLINIC
TECHNIC AND INNOVATION
INDUSTRY

GATEKEEPER OVERVIEW | 2020
THE POTENTIAL OF EXPLOITATION
OBLIGATION

- Ensure that the public investment in the project is converted into socio-economic benefits for the society

- Exploitation is the use of results for commercial purposes or in public policymaking.
  - Often overlaps with dissemination and communication, especially for close-to-market projects.

- Contractual obligation to:
  - Take measures aiming to ensure ‘exploitation’ of the results
  - Up to four years after the end of the project