

# About GATEKEEPER



## Mission & Vision

GATEKEEPER is a European **Multi Centric Large-Scale Pilot** on **Smart Living Environments**. The main objective is enabling the creation of a platform that connects healthcare providers, businesses, entrepreneurs, and elderly citizens and the communities they live in, in order to originate an **open, trust-based arena for matching ideas, technologies, user needs** and **processes**, aimed at **ensuring healthier independent lives for the ageing populations**.

The **scope** of GATEKEEPER is the application of advanced Information and Communications Technologies (ICTs)

to tackle the challenge of improving the quality of life of citizens while demonstrating its significant efficiency gains in health and care delivery across Europe

The main objective of the Project is to create a GATEKEEPER, that connects healthcare providers, businesses, entrepreneurs, elderly citizens and the communities they live in, in order to originate an open, trust-based arena for matching ideas, technologies, user needs and processes, aimed at ensuring healthier independent lives for the ageing populations.



## Impact

The creation of the platform, is supported by the following specific objectives:

- To deliver the **GATEKEEPER DIGITAL PLATFORM** implemented through fault tolerant, secure, flexible and scalable micro-services infrastructure, based on open source and data standards, built on top of reference W3C-Web of Things architectural models and including services referred to the health domain through HL7-FHIR and to the home domain through SAREF.
- To deliver the **GATEKEEPER HEALTHCARE SPACE**, where intuitive and self-configuring dashboards, intelligent services for early risk detection and care plans, and a federated data infrastructure are **provided to healthcare professionals**.
- To deliver the **GATEKEEPER CONSUMER SPACE**, where certified solutions, services and devices are **provided to citizens** for the management and prevention of health and social risks.
- To deliver the **GATEKEEPER BUSINESS SPACE**, where certified companies are able to **develop solutions, services and devices** alone or in partnership, following a set of standards in order to reach and boost the Digital Single Market.
- To deliver the **GATEKEEPER ECOSYSTEM TRANSACTION SPACE**, where services for data storage and processing, big data analytics and advanced visualization of business-oriented KPIs are **provided for the exchange of solutions among providers and suppliers**, based on data sharing and Value-based healthcare paradigms.
- To execute a series of **PILOTS** to demonstrate the effect, benefit, value and scalability of the GATEKEEPER solutions **around REFERENCE USE CASES** COVERING PRIMARY, SECONDARY and TERTIARY PREVENTION, initially deployed in 8 regions of 7 European countries.
- To provide an **ECOSYSTEM COCREATION** framework, resulting from Responsible and Social Innovation principles, aiming at engage and **generate TRUST** from Citizens, Healthcare Professionals, Supply and Demand Side, extended through open calls to SMEs, Start-ups, and new regions in an open innovation fashion.
- To implement a **STANDARDIZATION STRATEGY** that allow the GATEKEEPER solution to be aligned with SDOs around legal and privacy aspects, healthcare, ageing, homes, cities and energies, IoT, Big Data and other Key Enabling Technologies, as well as value-based procurement.
- To transform and process GATEKEEPER results in a reference and sustainable **IMPACT FRAMEWORK** for decision making about procurement of innovative solutions, integrating elements from Value-based Healthcare, Real World Data, and Health-Technology Assessment, involving relevant actors inside and outside the consortium through Communication and dissemination activities, for worldwide outreach of project activities and achievements.



## Arena

The technological platform that will be created in GATEKEEPER for managing all the data and applying digital innovations actions will be crucial.

The GATEKEEPER PLATFORM will enable standardization and collaboration, providing mutually beneficial results to a partnering ecosystem operating as a multi-sided market. All actors benefit directly or indirectly from having a growing number of users on the other side(s). For this purpose, GATEKEEPER has conceptualized four interlinked spaces where stakeholders will smoothly interact and connect through the shared use of the platform (see Figure 1).

**The Healthcare Space** provides a set of services, tools, data and components for healthcare, complying with the health protocols and regulations. It also connects with health information systems and records. It enables to build Business-to-Business (B2B) solutions and services from companies to healthcare providers.

**The Consumer Space** provides a set of services, tools and support components that allow the integration and interoperability of consumer-oriented solutions, appliances, robots, applications, data, sensors and platforms. It allows to build Business to Consumer (B2C) solutions and services to be used by end users for health or life-style monitoring, as well as integrated with solutions from the Healthcare Space to combine services and provide a holistic health view and monitoring in return.

**The Business Space** provides the adequate ecosystem for small, medium and large companies to develop solutions, services and devices alone or in partnership with other companies following a set of standards in order to reach end-users (Consumer Space) or health providers (Healthcare Space).

**The Ecosystem Transaction Space** provides a large selection of applications and devices leveraging AI, Big Data, machine learning and IoT technologies; coupled with a variety of smart objects (e.g. wearables, sensors, robots) currently available in the market to support Data Sharing and Value-based healthcare.



# Governance

## WP1 – Project coordination, IPR and Ethics management

- Continuous monitoring of the project's progress and timely initiation of corrective actions.
- Scheduling, organizing and executing project meetings, and implementing the communication procedures.
- Establishing communication and reporting with the European Commission
- Coordinating the technological, scientific and innovative focus of the project, preserving quality.
- Managing issues related with data, IPR, and ethics



## WP2 – Eco-system value co-creation, Open Calls and scaling up twinning

- Implement, manage and scale in a multi-stakeholder and dynamic environment that cuts across the 4 spaces.
- Forge new collaborations to establish momentum for the GATEKEEPER solutions, services and devices.
- Plan and implement the open innovation and co-creation workshops.
- Define and prioritize the requirements coming from all the stakeholders in the GATEKEEPER ecosystem
- Related to stratification, risk prediction, preventive care and added value health delivery.
- Share understanding of needs and barriers, ethical requirements, use cases, health events, technology, user
- Acceptance and business models in the four spaces.
- Develop a dynamic Responsible Research and Innovation (RRI) framework to articulate the stakeholders'
- Understanding of trust and privacy issues, aligned with the GATEKEEPER specifications (WP3).

## WP3 – Gatekeeper Web of Things (WOT) Reference Architecture

To expand the Web of Things concept and needs in relation to healthcare and the smart and healthy living at home market domains and to propose the overall architecture of the GATEKEEPER solution with references to its components and general data flows. WP3 will provide to the other technical WPs (WP4 and WP5):

1. Paradigms from the current state of the art (Web of Things, eHealth, mHealth, Big Data, AI) and best design practices for the project.
2. The functional and technical requirements of the platform and main components.
3. Description of core services and components related to healthcare, consumer , business and ecosystem transaction spaces
4. The interoperability layer based on Web of Thing and the healthcare and smart appliance domains.
5. The approach to accelerate, optimize and improve smart home solutions and IoT devices for smart living at home, and the architectural design of the GATEKEEPER ecosystem.



## **WP4 – GATEKEEPER Things Management Infrastructure & Development**

Based on the requirements and designs provided by the WP3, this work package will provide the infrastructure and the low-level functionality (microservices) required by the WP5 to deliver an integrated GATEKEEPER ecosystem. More specifically, WP4 has the following objectives:

1. To support the implementation, and operational maintenance of the reference implementation of the Gatekeeper core infrastructure.
2. To develop the core services of the GATEKEEPER platform in order to build the thing management system, the concept of trustiness within the project platform and the marketplace.
3. To provide the implementation, and operational maintenance of Big Data capable services to enable the development and execution of personalized risk detection, Interventions and advanced visualization.
4. To deliver a Data Federation Framework and to establish a Semantic Data Lake for the Healthcare space for capturing, formalizing and integrating the Personal Health Background with Environmental Measurements.

## **WP5 – Integrated Plug&Play Gatekeeper Dynamic Intervention services**

Based on the infrastructure and core platform services offered by the WP4, this WP will deliver the integrated GATEKEEPER Dynamic Intervention solution ready to support the pilot studies in order to build and populate the consumer, business and healthcare spaces but also the future exposure of these intelligent services within the Ecosystem Transaction space. In particular, WP5 will:

- Generate the GATEKEEPER respective intervention services for all the supported spaces;
- Build the intelligence (AI-powered tools) of the platform by creating (i) diagnostic and prognostic algorithms for several diseases, (ii) early detection of changes in patient conditions, (iii) the risk factor evaluation, (iv) personalized monitoring, prevention and intervention, (v) integrated multi-robot-based service for smart community-based care services
- Provide interfaces for services integration and support (e.g. toolsets for smart homes and other interventions) to be dynamically adapted to the user needs,
- Build APIs for the functional integration of the software prototypes (including externals)
- Develop controllers to advance and personalize the analytic of Home and Health Activity Monitoring by
- Considering the semantically formalized Personal Health Background and Environmental Measurements.



## **WP6 – Medical uses cases, early detection and interventions**

The objective of this WP is to elicit the design of the early detection and interventions use cases, deployed at each reference site, and to ensure that they

- consistently address GATEKEEPER's objectives,
- Are of high clinical and scientific standards, and
- Define the study protocols to be used for impact evaluation.

Decisions about how health determinants can be measured through IoT and underlying KETs, domains to be targeted for interventions and how machine learning and big data analytics strategies have to be adopted, will be taken. This will allow to define a new paradigm for trial design and an innovative use of IoT, which will result in the generation of novel Real Word Data. The WP is based on an iterative approach, whereby the first definition of the use cases will be completed during the TAKEOFF phase (by M6), and will be subsequently revised at each ensuing phase (on M12, M24 and M36), in order to enact a continuous improvement process

based on feedback received from WP7. In addition, the WP manage new uses cases from Open Calls in WP2. Special focus is put on the challenge of assessing the impact generated by preventative strategies, enabling the creation of a VBHC business case for prevention, feeding WP9 and specifically T9.3.

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### **WP8 – Standardization and certification mechanisms**

- To identify and analyse the relevant standards and standardization tracks for GATEKEEPER,
- To coordinate and support the standardisation of relevant GATEKEEPER technology,
- To analyse and support an effective certification strategy to develop trust in data processing and,
- Interoperability of GATEKEEPER solutions.
- To develop and specify a model of procurement process for the outcomes of the GATEKEEPER platform

### **WP9 – Dissemination, Communication, Exploitation and Sustainability**

To maximize the impact of the project in the ICT, cross-cutting enabling technologies and AHA fields and evaluate the actual impact achieved across the innovation tracks and socio-economic environment.

## **CONTACT**








If you want to contact the GATEKEEPER Coordination Team, please send an email to the address below:

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In addition, we encourage you to meet the [GATEKEEPER management board](#) here so you can redirect your question accordingly.

## **INTERESTED LINKS**

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- AIOTI
- AAL Programme
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- Open & Agile Smart Cities

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