retention
SMART HEART FAILURE MANAGEMENT

Horizon 2020 Project RETENTION

"HEART FAILURE PATIENT MANAGEMENT AND INTERVENTIONS USING CONTINUOUS PATIENT MONITORING OUTSIDE HOSPITALS AND REAL WORLD DATA"

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		CO = Confidential	
		Cl = Classified	

Document information and history

Deliverable description (from DoA)

D9.2 – Communication, Dissemination, Impact Creation, Exploitation & Standardisation plan [i2G, M4]: This document will describe a concrete plan for RETENTION dissemination, communication, impact creation, exploitation and standardisation activities. It will provide estimations on the activities to be performed, like presentations, paper publications, articles in popular media, participation in standardization bodies etc., and the associated KPIs. It will also provide the project's business plan.

Please refer to the Project Quality Handbook (D2.1 Initial Quality and Innovation Plan) for guidance on the review process and the release numbering scheme to be used in the project.

Version N.	Date	Author [Person and Organisation]	Reviewer [Person and Organisation]	Milestone*	Notes
V0.1	24/06/2021	Matteo Colombo (i2G)		TOC	
V0.2	19/07/2021	Vassilia Costarides, Maria Haritou (ICCS)		1st round of contributions	
V0.3	04/08/2021	Natalia Allegretti (i2G)		Consolidation of contributions received and editing	
V0.4	09/08/2021	Maria Haritou (ICCS)		2nd round of contributions and editing	
V0.5	24/08/2021	Angeliki Gkouziouta (OCSC),Hala Hourani and Erica Visentin (LSE), Giorgos Deltoro (DM), Michalis Vakalellis (AEGIS)		Partners contributions	
V0.6	30/08/2021	Josè Maria Vieitez (SERMAS), Christina Nanou (EUNL), George Deltoro (DM), Mary Roumpi (FORTH)		Partners contributions	
V0.7	20/09/2021	Ioannis Basdekis (SPHYNX), Christina Nanou (EUNL), Mercedes Rivaslasarte and Chema Vieitez (SERMAS)		Partners contributions	

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Version N.	Date	Author [Person and Organisation]	Reviewer [Person and Organisation]	Milestone*	Notes
V0.8	21/09/2021	Natalia Allegretti (i2G)		*Integration of new contributions received, and editing*	
V0.9	30/09/2021	*Bastian Schmack (UK ESSEN), Laura Borghese (UNIBO), Septimiu Nechifor (SIESLR)*		*Partners contributions*	
V0.91	04/10/2021	Matteo Colombo (i2G)		*Finalisation of exploitation and market analysis section*	
V0.92	11/10/2021	Vasiliki Bistola (NKUA)		*Partner contributions*	
V0.93	11/10/2021	Natalia Allegretti (i2G)		*Integration of new contributions received, and editing*	
V0.94	12/10/2021		*Maria Haritou (ICCS), Ioannis Basdekis (SPHYNX), Angeliki Gkouziouta (OCSC)*	*Document Reviewed by the PC and deliverable appointed peer reviewers*	
V0.95	14/10/2021	Natalia Allegretti (i2G)		*Consolidation of the document after peer review*	
V1.0	15/10/2021	Maria Haritou (ICCS)		*Deliverable submitted*	

* The project uses a multi-stage internal review and release process, with defined milestones. Milestone names include abbreviations/terms as follows:

TOC = "Table of Contents" (describes planned contents of different sections);

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o *Intermediate: Document is approximately 50% complete – review checkpoint;*

ER = "External Release" (i.e. to commission and reviewers);

o *Proposed: document authors submit for internal review;*

o *Revised: document authors produce new version in response to internal reviewer comments approved: Internal project reviewers accept the document.*

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1 Executive Summary

The present plan aims to develop an implementable strategy with related methodologies to carry out appropriate and effective dissemination, communication, impact creation, exploitation and standardisation activities with the intent to maximise the impact of the RETENTION project. It is aimed at promoting the relevant project's outputs, securing their adoption and scale up. Dissemination and exploitation will progress with an intensity and timing coherent with the advancement of the RETENTION project main objectives and expected achievements.

To ensure wide dissemination of the project and to secure its impact, outreach and sustainability, the plan undertakes the following activities:

1. Develop and deploy communication and dissemination planning to ensure that all project outputs reach the appropriate audience and have the expected impact.
2. Monitor the achieved impact of the dissemination and adjust methodologies as appropriate.
3. Organise the involvement of all partners to ensure a correct deployment of the dissemination strategy.
4. Coordinate with external stakeholders (patients, regulatory bodies, healthcare providers, decision makers), as well as other related projects and institutions to ensure a high outreach of the communication activities.
5. Design of the project exploitation strategy and related activities to ensure that its results can be used beyond the lifetime of the project, be self-sustainable after the project funding is over, scaled up to additional territories, influence future policies and practices.
6. Align and contribute to relevant standardisation initiatives.

2   About this Document

The D9.2 provides a framework for the dissemination and exploitation actions of the RETENTION project. It identifies the target audiences, details a clear communication strategy along with the key messages, and identifies the range of communication tools and channels most appropriate to promote the project at European, national, regional and local levels. Moreover, it outlines a European and an individual strategy for each partner to exploit and transfer the project results to relevant European and local actors and gives indications on how to align and contribute to relevant standards.

This deliverable is part of Work Package 9, led by the i2Grow (i2G).

Role of deliverable

The main purpose of this deliverable is to provide, in a structured and handy way, the key targets of the dissemination action, dissemination goals, and the set of key dissemination channels. The plan provides project partners with practices and guidelines on how to reach stakeholder groups, assist in the preparation of adequate messages targeting different audiences and in the identification of proper channels for the implementation of the planned dissemination activities. The plan also defines roles and responsibilities of project partners to guarantee the smooth running of the dissemination and communication activities in many areas. By raising public awareness about the project objectives, its lessons learned and its results, the dynamic approach to communication described in the plan is intended to prepare the exploitation of the project results, identifying the possible value propositions of RETENTION, its potential customer segments, and the key resources it will use to exploit its results after the project end. It also depicts the standardisation methodologies and activities that will be put in place to assure the concretisation of a solid liaison with relevant standardisation bodies.

Relationship to other RETENTION deliverables

The Communication, Dissemination, Impact Creation, Exploitation & Standardisation plan is connected with all the project's WPs and related deliverables, taking input from the overall project's activities and giving back, as output, awareness about the project and its results to key stakeholders, experts and the general public, guidance to facilitate the sustainability and wider adoption of the project's exploitable results and liaisons with relevant stakeholders.

Structure of the document

The core of the document is composed of 10 chapters, including this one, that outline:

1   Executive Summary
2   About this Document: deliverable role, relationships with other deliverables and its structure
3   RETENTION approach to impact creation and maximisation
4   Dissemination strategy encompassing the project's stakeholders mapping, approaches to reach each audience group, typologies of dissemination activities and partners' individual dissemination plans
5   Visual identity toolkits
6   Outline of RETENTION dissemination and communication tools and channels, including the web site, social media channels, scientific publications, targeted conferences, newsletter, videos, press releases, presentation materials and project's templates
7   Dissemination and Communication monitoring procedures
8   Project's exploitation strategy and plan and partners' individual exploitation plans

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9 Standardisation plan including methodologies to be used and identification of relevant initiatives and bodies

10 Conclusions

The Plan contains supporting appendices as follows:

Annex 1: RETENTION Logo & identity basic guidelines

Annex 2: RETENTION press releases' template

Annex 3: RETENTION deliverables' template

Annex 4: RETENTION communication and dissemination reporting tool

3 RETENTION impact creation and maximisation

During its execution, RETENTION will ensure it meets its ambitious objectives and achieves expected impacts with a three-stage impact assessment approach. According to it, impact assessments occur at: (1) the project level to ensure project partners deliver the required outputs to test the proposed approach; (2) the pilot level with involved local and national stakeholders to produce outcomes that test and refine the value proposition and improve the business case for RETENTION; and (3) a European level encompassing a wider society to aggregate and spread social and economic benefits that result from the business case.
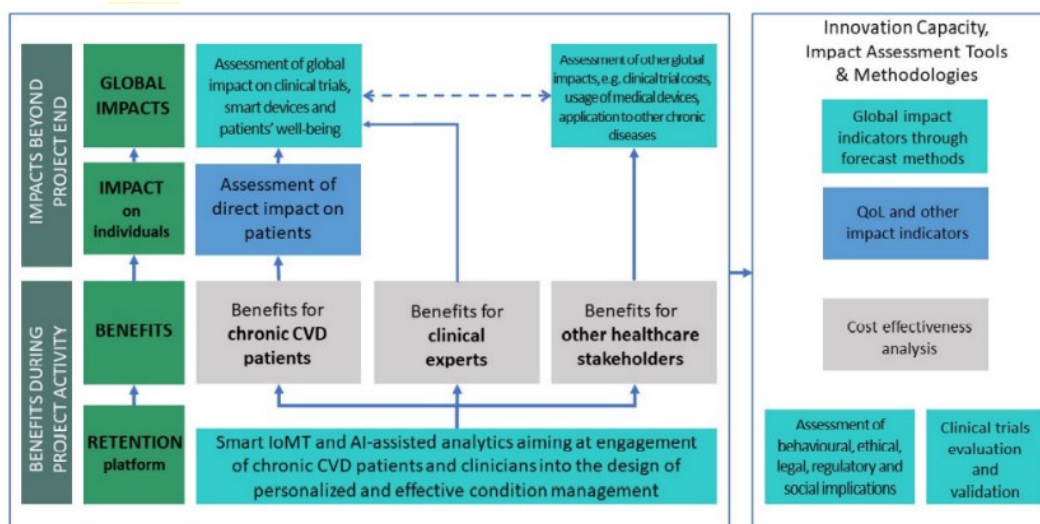
Figure 1: RETENTION Impact delivery approach

To maximise the impact of the RETENTION project, a sound methodology has been designed and related actions will be implemented following the entire project's lifespan for raising awareness on the project achievements, with a view to achieve their sustainability even after the end of the funding period.

Dissemination, Communication, Stakeholders' Engagement, Exploitation and contribution to Standardisation are the key levers that the RETENTION Consortium is properly using and will use to maximise the project's impact towards its key stakeholders' community.

This document provides a comprehensive overview of the plans, resources and capabilities involved in the maximisation of the project's impact towards individuals, care systems and wider society. It also gives practical guidelines to the project partners defining roles and effort, encouraging them to use their dissemination networks, industrial partnerships, standardisation activities and long-standing experience in EU funded projects for the purpose of project results adoption and successful future commercialisation of RETENTION outputs.

To significantly increase the acceptance of the novel and innovative solutions proposed by RETENTION, an External Advisory Board (EAB) involving relevant external stakeholders from research, academia, and industry has been initially established during the first months of the project, and could be further populated, if required. The EAB will help RETENTION to connect with possible adopters and end users, as well as with other projects and research initiatives, and important standardisation bodies in multiple domains. The EAB will follow the project development and will provide necessary feedback in order to ensure that the scientific and technological evolution of the project is in the direction to fulfil its goals. The EAB members will offer an

external global viewpoint to ensure that the project's research and development targets and activities are appropriate for producing significant advancements beyond the state-of-the-art.

4 Dissemination

The RETENTION consortium employs a multi-level plan intended to communicate and disseminate the project and its results, aiming to reach to and engage the healthcare community, as well as the broader research and expert communities and the general public. The dissemination and communication plan ensures that appropriate activities are in place to inform, engage, create awareness, and promote information about RETENTION, its aims, its outputs and impacts and the wider societal implications of the project.

RETENTION is a multidisciplinary project, involving technology research and innovation, clinical novelty, policy considerations as well as business workflows' harmonisation, standardisation and efficiency aspects, as well as safety, security and privacy. This multidisciplinary nature of the project determines also the promotion and dissemination planning that has been made, involving different types of target audiences and dissemination channels. There are three distinct groups of partners in the RETENTION consortium, namely: Academic and Research, Healthcare, Business and Legal. Each group has its own distinct exploitation and dissemination interests and plans, therefore the dissemination planning has been made taking into account the specific needs and capabilities of each group.

RETENTION will move along several promotion/dissemination concepts, each of which follows a different route for dissemination according to the kind of access reserved to external people such as access through media, on demand or through events. Dissemination will also be based on the contribution that RETENTION actors bring to specific sectors as group-based promotion in the medical community.

For any dissemination concept however, the basic line of thinking is that the work packages need to produce some first results before we can generate material that is worthwhile and includes enough content and information to enable adequate and effective dissemination.

In terms of organisation, the idea is to involve the academic & research partners in the scientific evaluation of the project results from peers and in dissemination through events (conferences and seminars), the clinical partners involved mainly in the group-based promotion and secondarily in dissemination through events and media and to have the businesses involved in the dissemination on demand and using their own access channels to media to disseminate the RETENTION system.

The communication and dissemination strategy of the project has three main goals:

- Make sure that the vision, objectives, activities and outcomes of the project will be widespread and understood in both the scientific and the related stakeholders' communities
- Promote clear and concise messages to stakeholders, policymakers and end-users
- Promote the exploitation of project outcomes outside of the RETENTION consortium

Whereas dissemination strategy of RETENTION is focused on the scientific and expert community, the communication strategy focuses mainly on the end-users and the general public.

Dissemination and communication activities are planned to take place from the very beginning of the project. The dissemination and communication as well as the exploitation strategy for RETENTION is outlined in Figure 2 below.
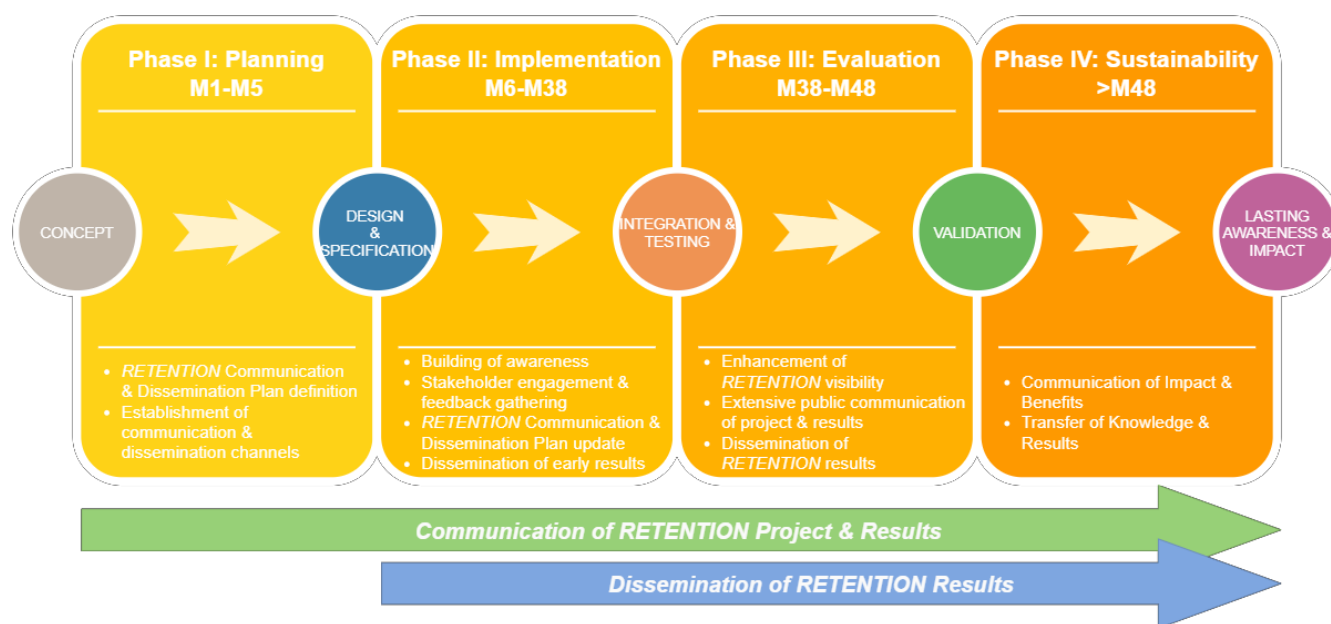
Figure 2: RETENTION Communication & Dissemination strategy timeline

4.1 Online and Offline Dissemination

The RETENTION consortium seeks to actively use heterogeneous channels for its dissemination and communication activities. These will leverage electronic (online) channels, offline (traditional) channels, as well as interactive dissemination channels.

Main channels for online dissemination activities are:

- The project web site,
- The bi-annual electronic newsletters,
- The press releases,
- The project's social media channels,
- The YouTube project's channel and published videos.

Main channels for offline dissemination activities are:

- The traditional media channels (magazines, newspapers, television),
- The project's communication materials (flyer, brochure, poster).

4.2 Stakeholders mapping (NKUA)

The RETENTION project and its results will be communicated to all interested parties, including affected individuals (patients, caregivers and patient organisations); healthcare professionals (clinicians and nurses); healthcare providers and healthcare-related financial organisations (national health systems and health insurance providers); and technology providers.
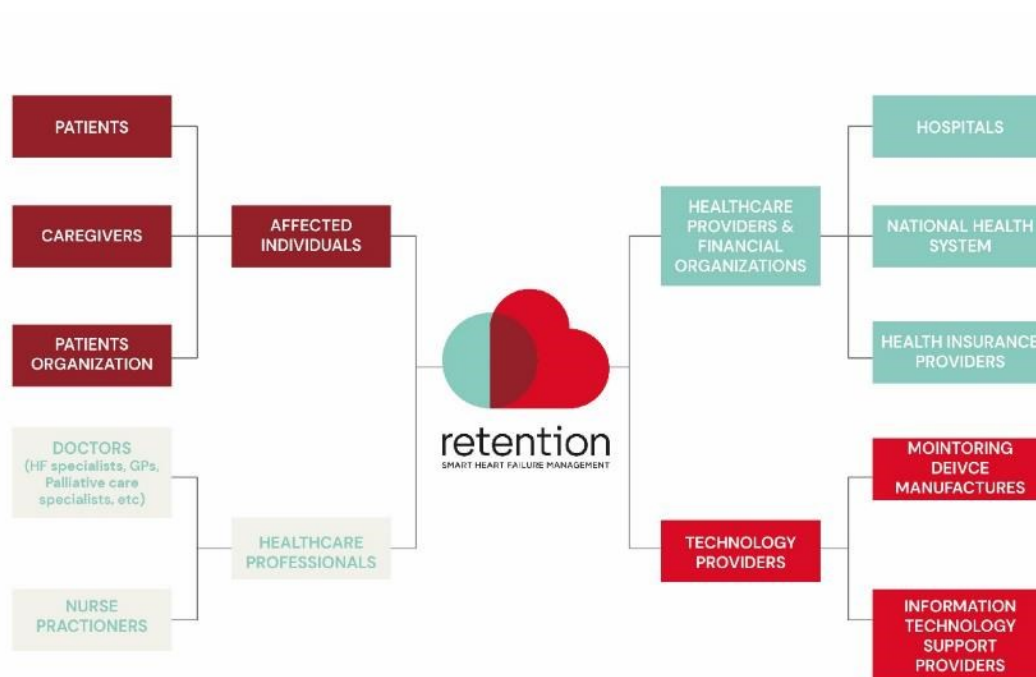
Figure 3: Stakeholders' map

Affected individuals, including primarily HF patients and their caregivers, are of the most important stakeholders of the study as they will be the primary recipients of potential beneficial effects of the RETENTION solution. Individuals that will take part in the clinical study will be directly involved and therefore informed of the results of the present research. Importantly, however, the results will potentially affect the broad population of heart failure patients and their caregivers. Because these stakeholders often do not have access to scientific resources (such as scientific journals, etc), alternative dissemination methods would be more appropriate for them, including printed leaflets, newsletters, emails, social media and news media.

Heart failure patient organizations, (i.e. National HF patient groups, European Society of Cardiology Patient Forum etc) are also stakeholders for the RETENTION solution. These stakeholders potentially have communication channels open to patients and caregivers, and teaming with these stakeholders from the beginning can help formulate the appropriate messages and the best means for disseminating results.

Healthcare professionals (including doctors and nurse practitioners) presents another important stakeholder for the project because they are the primary effectors for the implementation of the RETENTION solution in clinical practice. Healthcare professionals will be informed directly at their practices through: fliers, leaflets, posters of the RETENTION solution, emails; access to publications in scientific journals and conferences; and through their Scientific associations (such as the Heart Failure Association of the European Society of Cardiology,https://www.escardio.org/Sub-specialty-communities/Heart-Failure-Association-of-the-ESC-(HFA)).

Healthcare providers/financial organizations are also stakeholders for the RETENTION project. Public insurance schemes as well as private insurance companies are increasingly interested in providing cost-efficient solutions for provision of care for patients with chronic diseases such as HF. The RETENTION solution aims to reduce healthcare costs, by: (a) decreasing unplanned hospitalizations through early recognition and

appropriate therapeutic interventions with the use of remote monitoring; and (b) decreasing the number of for face-to-face physician contacts thereby reducing all related direct and indirect costs. These potential effects of the study results will be communicated to healthcare providers through the project web site, electronic newsletters, and press releases and most importantly through access to scientific publications in peer-reviewed journals.

Technology providers (device manufacturers, IT providers) are key stakeholders in the present project. By providing the standardized devices/procedures that will be tested in the RETENTION project to the patients/caregivers and supporting healthcare professionals towards the use of electronic platforms, these stakeholders will facilitate dissemination of the results of the present project to the wide population of HF patients.

4.3 Scientific Dissemination

One of the main purposes of RETENTION dissemination and communication strategy is to convince and influence the relevant scientific communities, so that they become aware of the project's innovative ideas, services and results and hopefully adopt the RETENTION solution and exploit it. The main strategic scientific groupings have been identified for the dissemination and communication of the project and are as follows:

Table 1: RETENTION key scientific areas of interest

Ambient Assisted Living	Machine Learning
Heart Failure management	Artificial Intelligence
National Heart Failure Societies and Working Groups	Internet of Things and Intelligent Systems
Cardiology Associations	Service-Based Computing
Transplantation Associations	Big Data Management and Analytics
Social Sciences	Process Mining
Medical -IoT	Interoperability
Clinical decision support systems	Cyber and Information Security
Medical Devices	Biomedical Engineering
Medical Informatics	Biomedical Eng. Education

RETENTION project is planning to demonstrate project progress and outcomes in the scientific community, the relevant stakeholders as well as to the EU. To this extent RETENTION aims to organise:

- at least two demonstrations of the project results in EU related events
- at least one demonstration of the project results in a major international fair / exhibition
- at least two demonstrations of the project technical results in major international conferences
- at least two demonstrations of the project clinical results in major international medical conferences or symposia

The RETENTION consortium aims to the strengthening and benefit to the European community via sharing of knowledge on an open-access basis. Special attention will be given on fostering open access of the project's outcomes. The Consortium will fully address the European Commission requirements through the support of open access for published articles. All scientific publications of the project's results will be granted open

access according to publisher and law regulations as set out in the RETENTION Grant Agreement. Depending on the nature of the publication, the articles will be made available immediately through open access publishing ('gold' open access) (e.g. by an open-access journal) or within a period of 6 months through self-archiving ('green' open access). To this extent RETENTION consortium will exploit online tools such as the Open Access Infrastructure for Research in Europe (OpenAIRE - https://www.openaire.eu/), the Registry of Open Access Repositories (ROAR -http://roar.eprints.org/) and the Directory of Open Access Repositories (OpenDOAR- http://v2.sherpa.ac.uk/opendoar/).

A main activity of RETENTION project is the collection and analysis of data during the clinical trial execution. This data concern accessed personal and clinical data as content within RETENTION or the secondary output from data analytics performed. Part of this data will be made available to the public, provided that privacy and security issues are addressed, adhering to legal and ethical guidance for handling personally identifying data. RETENTION public dataset will be made discoverable, accessible, assessable and intelligible, useable and interoperable using data sharing services such as OpenData (http://data.europa.eu/euodp/en/data/) or EUDAT (https://www.eudat.eu/) for open access.

4.4 Dissemination targeting Healthcare providers

The dissemination of the RETENTION project among healthcare providers is a key point to ensure RETENTION implantation and consolidation in clinical practice.

The strategy targeting healthcare providers will have two different levels:

1. In person:

    - Dissemination at main European Cardiology, Heart Failure and Transplantation meetings and symposia where abstracts (design, preliminary results, and results) should be presented. Whenever possible, a stand in the commercial zone will be installed with interactive simulations of the RETENTION platform.

    - In a more advanced phase of the project, visits to hospitals can be organised to demonstrate how the RETENTION platform can be implemented in clinical practice and its potential benefits. Many of the doubts, worries and fears of the Healthcare providers can only be solved when they see the system implemented and working in their daily activity.

2. Health websites and Social Media:

    - Scientific presentations and publications must be amplified in social media platforms (Facebook, Twitter, Instagram, and YouTube) by the official RETENTION account and by clinicians who are part of the RETENTION consortium, some of them with thousands of followers in the Cardiology community. #RETENTION hashtag should be used in each publication.

4.5 Dissemination targeting Standardisation bodies

The dissemination of the outputs generated throughout the project to standardization bodies in a timely and effective manner is an essential component of the RETENTION project. Better dissemination of the outcomes generated through this research will also result in better standardisation and validation of the results, overall

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enhancing the impact of the project. The specific objectives of the dissemination targeting standardisation bodies are the following:

- To provide a concrete synthesis and analysis of the standardisation practices applied in the project.
- To identify how the research results can be harmonized in line with international standards in terms of E-health, Real Word Data (RWD) and Real Word Evidence (RWE).
- To validate the methodology of standardisation processes and the outputs.

The targeted dissemination activities will include presentations in related conferences and publications in peer-review journals, as well as direct contacts with identified standardization bodies in the form of surveys and/or validation workshops, among others.

Detailed methodology for dissemination to standardisation bodies is described in section 9.2.

4.6 Dissemination targeting the Healthcare Industry

Dissemination and related communication actions towards the healthcare industry are a fundamental asset for the RETENTION project to inform and influence individual and organisations' decisions to develop and deliver products and/or services built on top of the project's results.

Presently, the medical technology market is worth billions of U.S. dollars worldwide, and Europe is an established centre of this industry alongside North America. In Europe, 7.4 percent of all healthcare expenditure in 2018 was spent on medical technology.

This RETENTION target audience requires the selection of the most appropriate communication channels and the selection of appropriate messages to be promoted. Demonstrations in industry fairs and exhibitions, in addition to the traditional dissemination means already mentioned, can significantly increase the awareness of the project in the industrial domain targeted. In this context, RETENTION will seek to organise at least one demonstration of the project results in a major international fair and/or exhibition. In addition, RETENTION will seek to organise at least one more demonstration of the project technical results in EU-focused industry events, as well as at least two demonstrations of the project technical results in major international conferences.

4.7 Synergies with other projects and initiatives

The RETENTION project falls into a wide group of projects dealing with the different discipline areas involved. Several partners in the consortium are already participating in related projects at a national and/or international level. Moreover, there are other projects running that are related in the domain and/or produce outcomes that may interest RETENTION and can be exploited. The project will actively pursue cross-fertilisation with relevant projects in terms of technologies, impact assessment outcomes and recommended policies for future directions. The table below contains related projects that the consortium partners are involved.

Table 2: Related projects with RETENTION partners involved

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Project	Description	RETENTION partners involved
 https://uniti.tinnitusresearch.net/	UNITI aims to deliver a predictive computational model based on existing and longitudinal data attempting to address the question which treatment approach is optimal for a specific tinnitus patient based on specific parameters. Clinical, epidemiological, medical, genetic and audiological data, including signals reflecting ear-brain communication, will be analysed from existing databases.	ICCS, NKUA, STS
 https://www.smart-bear.eu/	SMART BEAR will deliver a solution offering: Continuous and objective monitoring and interventions for 21st century precise and personalised medicine towards optimising disease and associated risks' management. Measurable improvements to the Quality of Life of the elderly and their ability to live independently.	ICCS, FORTH, STS
 https://h2020evotion.eu/	EVOTION is about enabling seamless collection of big data from all actors and related to treatment of hearing loss to inform, support, and develop hearing health care policies. This will be achieved by developing a multi-stakeholder demonstrator platform that combines and analyses heterogeneous big data from clinical repositories and from patients' everyday hearing aid use and clinical treatment. The subsequent big data analytics is expected to produce ecologically valid evidence for the formulation and validation of public health policies.	ICCS, NKUA
 https://holobalance.eu/	HOLOBALANCE aims to develop a new personalized hologram coach platform for virtual coaching, motivation and empowerment of the ageing population with balance disorders. The coaching part will be realised by holograms and augmented reality games, along with easy to use sensors that can be customized to implement and coach the user with specific, individualized exercises, offering new forms of accessible user interaction.	ICCS, NKUA, STS

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EMBALANCE http://www.embalance.eu/	EMBALANCE aims to develop a data repository and decision support system (incorporating data mining) for the diagnosis of human balance problems.	ICCS, NKUA
I-BiDaaS https://www.ibidaas.eu/	I-BiDaaS aims to empower users to easily utilize and interact with big data technologies, by designing, building, and demonstrating, a unified solution that: significantly increases the speed of data analysis while coping with the rate of data asset growth, and facilitates cross-domain data-flow towards a thriving data-driven EU economy.	FORTH
sustAGE http://www.sustage.eu/	sustAGE aims to develop a person-centred solution for promoting the concept of "sustainable work" for EU industries, thus support the well-being, wellness at work and productivity of ageing employees. The project aims to deliver a composite system integrated with the daily activities at work and outside, deployed in the industry domains of manufacturing and transportation & logistics.	FORTH
SENSE-Cog https://www.sense-cog.eu/	SENSE-Cog aims to promote mental well-being by understanding the inter-relationship of sensory impairments and cognitive and mental health function, identifying novel means of screening and detection for diagnostic and therapeutic purposes and translating this knowledge into clinical applications to improve the mental well-being of EU citizens.	NKUA
impilo https://www.datamed.gr/impilo	IMPILO: The innovative **Blockchain** technology promises to change the way electronic transactions are made across multiple sectors, including healthcare. The limited efforts until today in the field of healthcare focus on leveraging Blockchain technology as a means of managing public and private keys for providing and withdrawing patient consent for access to sensitive medical data. This proposal aims to evolve existing approaches by creating the world's first **Electronic Health Record (EHR)** application based on **Blockchain technology**.	Datamed, ICCS-NTUA
	TRANSITION aims at the holistic study of Cutaneous Melanoma (CM) through an	Datamed

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https://www.datamed.gr/transition	intelligent, multi-layered, combinatorial analytical strategy integrating demographic, clinical, imaging and molecular data of patients with CM. CM is a malignant tumor of the melanocytes of the epidermis, namely cells at the basal layer that produce the melanin pigment. Although CM accounts for less than 5% of skin cancer cases, it is responsible for the majority of deaths for this class of cancers, because of its highly aggressive nature. Over the last decades, CM incidence is steadily increasing throughout the world, because of the modern western lifestyle (tourism and increased of intermittent exposure to solar radiation, nutrition). The project performs: • a multi-level molecular characterization of patients with melanoma • Using dermatoscopy data to systematically monitor changes in skin lesions and to timely diagnose SCM • Designing and developing flexible, advance Electronic Health Record (EHR) software spesific to treating SCM • Designing and developing a patient registry	
https://www.datamed.gr/pedobesity	Obesity in childhood and adolescence represents a major health problem in our century. In Greece, more than 30-35% of children and adolescents are currently overweight or obese. Overweight and obesity in childhood and adolescence lead to obesity in adulthood and are associated with significant morbidity and mortality. The complications of obesity are many and also account for a significant increase in public health costs. Therefore, it is imperative that we take all necessary measures not only to treat but mostly to prevent overweight and obesity in childhood, so that we can ensure improved health in adulthood, as well as reduced medical costs owing to complications of obesity. The main innovative actions of the proposed project are:	Datamed

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	- The collection and analysis of clinical, haematological, biochemical, endocrinological and genetic data from patients. - The detection of polymorphisms associated with obesity. - The development of specific obesity risk algorithm by linking genotype to patient data. - The creation of online and mobile apps to integrate the ecosystem. The development of intelligent data management platform.	

The RETENTION project aims at consolidating two or more stable liaisons with relevant EU projects/initiatives until the end of it funding period.

4.8 Partners' dissemination plan 2021-2025

The table below depicts the RETENTION partners' individual dissemination plans for the entire duration of the project, indicating the dissemination actions that will be implemented and the related targets (KPIs – Key Performance Indicators) that should be achieved.

Table 3: Partners' dissemination plan 2021-2025

Partner	Dissemination type	KPI	Partner	Dissemination type	KPI
ICCS	Conferences	6	LSE	Conferences	2
	Papers	4		Papers	2
	Workshops	2		Workshops	2
	Articles in international referred technical and non-technical journals	2		Articles in international referred technical and non-technical journals	2
	Articles in traditional media	1		Articles in traditional media	1
	Demostrators	1			
	Meetings with EU healthcare and/or patient associations	1			
OCSC	Conferences	2	STS	Conferences	2
	Papers	2		Papers	2

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Partner	Dissemination type	KPI
	Workshops	2
	Meetings with policy makers	1
UNIBO	Conferences	6
	Papers	4
	Workshops	3
	Meetings with policy makers	1
UKESSEN	Conferences	2
	Papers	2
	Workshops	1
	Meetings with policy makers	1
SERMAS	Conferences	3
	Papers (in contribution with other clinical partners)	2
	Workshops	1

Partner	Dissemination type	KPI
	Workshops	1
	Articles in traditional media	1
	Demostrators	1
DM	Conferences	1 (and any other conferences arranged by other partners)
	Papers	2
	Workshops	1
	Articles in international referred technical and non-technical journals	2
	Face-to-face networking	1
i2G	Conferences	2
	Workshops	4
	Articles in traditional media	1
	Meetings with EU healthcare and/or patient associations	1
	Face-to-face networking	1
AEGIS		
	Workshops	3
	Articles in international referred technical and non-technical journals	2

Partner	Dissemination type	KPI		Partner	Dissemination type	KPI
	Articles in traditional media	1			Articles in traditional media	1
					Demonstrators	1
	Meetings with policy makers	1				
NKUA	Conferences	2		SIESLR	Conferences	2
	Papers	2			Papers	1
	Workshops	2			Workshops	2
	Meetings with policy makers	1			Articles in international referred technical and non-technical journals	2
					Articles in traditional media	1
					Demonstrators	1
FORTH	Conferences	4		EUNL	Conferences	1
	Papers	2			Papers	1
	Articles in international referred technical and non-technical journals	2			Workshops	1
	Demonstrators	1			Articles in traditional media	1

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5   RETENTION visual identity

The project visual identity consists of a logo, supported by a palette of colours and fonts.

5.1 RETENTION Logo

The proposals of the logo and the creative process of the graphic designer followed a declination in images of the core of the project: **Heart** failure patient management and interventions using continuous patient **monitoring** outside hospitals and **real-world data**.

The logo has been mainly selected for its immediacy and recognisability.

The union of the three elements summarises the mission of the RETENTION project, its objectives, its sources and its path: the simple stylistic shape of the heart has a universal recognition, besides being the emblem and the "beating heart" of the project, on which research, prevention, monitoring and data collection are intertwined. All this, represents the mission of the project:

"An innovative platform supporting enhanced clinical monitoring and interventions aimed at improving the clinical management of patients with chronic Heart Failure, reducing their mortality and hospitalisation rates, and improving their quality of life, safety, and well-being."
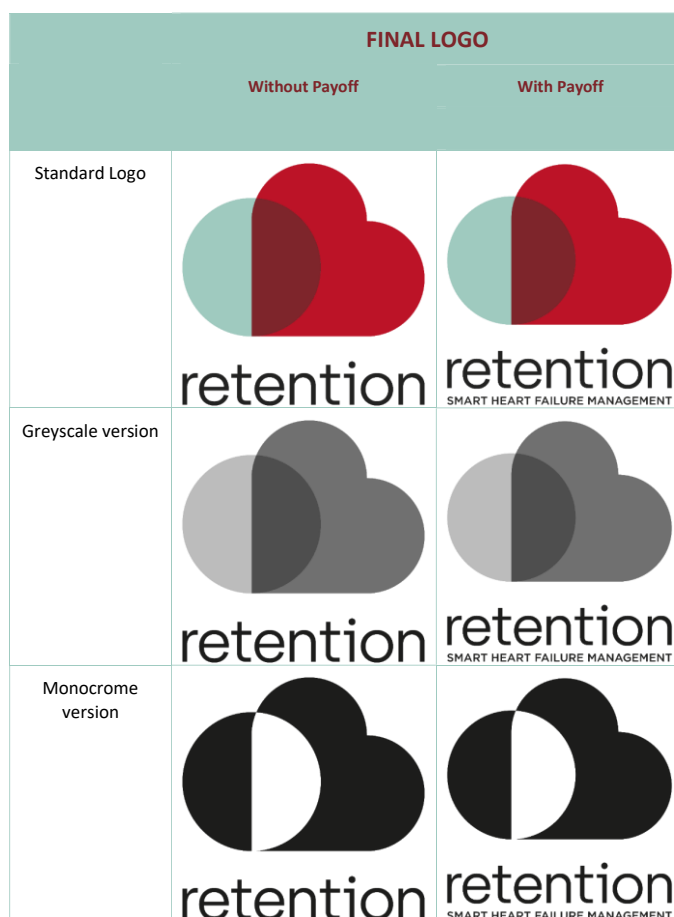
Figure 4: RETENTION logo declined in different versions

The logo can be used as a 'RETENTION quality hallmark' applicable to all RETENTION products (screens, favicons apps and websites, business cards, brochures, presentations, templates, newspaper articles, press releases, banners, website headers). The use of powerful colours creates a distinctive brand for the project and highlights its potential to be ground breaking.

Figure 5: Example of using the logo in the interface of a device
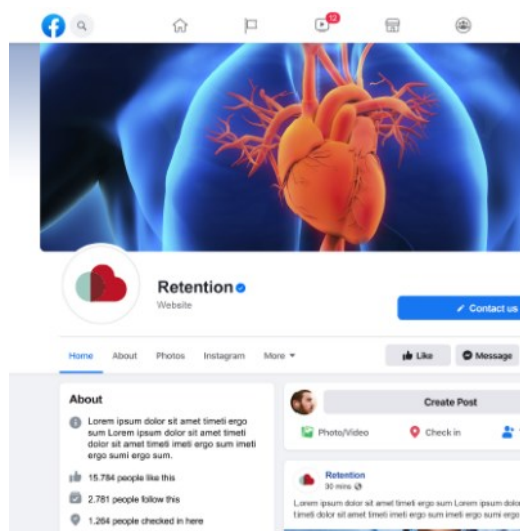
Figure 6: Example of using the logo in social media

Figure 7: Example of a monochrome version of the logo used on a slide in a presentation.

The logo has been chosen by the project Consortium. The options proposed by i2Grow were 10 initially and then, to ease the choice, a Google Form Survey, with a limited selection of logos, has been distributed to the partners to select the preferred one.

All options developed are reported below.

Figure 8: All versions of the logo developed and selected ones –highlighted in yellow– for the final Consortium choice

5.2 RETENTION Logo & identity basic guidelines

The RETENTION Logo & identity basic guidelines (see Annex 1) provide the basic tools and guidelines to ensure the correct use of the RETENTION's visual identity elements: logo, typeface and colour palette.

6 Communication and dissemination tools and channels

The key objective of communication and dissemination is to raise awareness and understanding of the RETENTION project and its results amongst the wider possible audience. The project dissemination planning involves activities to be carried out in a collective manner by the consortium as a whole, and also allows for country/partner/condition-specific related activities at a local or individual level.

The basic tools and channels to be employed for the project's communication and dissemination include:

- The RETENTION Web-site and social media channels

- The publication of papers in scientific journals

- Participation at symposia and conferences, conference publications

- The production of promotional material like newsletters, videos, brochures etc.

- Seminars, webinars, on-site demonstrations and workshops at the clinical trial sites

A short description of each communication/dissemination tool that is planned to be employed in the project lifespan is provided in the following sections.

6.1 Project web site

The official website of the RETENTION project can be found at the following link: www.retention-project.eu.

The RETENTION website was created collaboratively by all project partners. All textual content was created and agreed upon by each partner.

Each section of the site has been developed to allow users to more easily obtain any kind of relevant information about the project.

The shades of colours that recur throughout the site are in line with those predominant in the logo: from the choice of images to the information boxes created ad hoc, up to the titles, menu items and CTA buttons.

The RETENTION website is intended for practitioners, researchers, scientists, partners, people interested in the topic who can follow the scientific basis of the project, the methodology, but also the results of the study. The Dissemination & Publications section is open and documents are downloadable to provide technical data to clinicians. In addition, in the Media Kit section, journalists and scientific journalists can access downloadable documents for use in research articles.

6.1.1 Technical aspects

Here below information about the domain and registration data:

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Figure 9: Screenshot details about domain profile retention-project.eu

The website was created using the open-source software platform Wordpress, specifically the DIVI theme. Simple and extremely customisable layouts allow developers to modify or augment each page of the website.

A system has been applied to facilitate the readability of the website in accordance with the rules of the **W3C protocol**. This protocol will help people with visual impairments to access the web content.

The website is fully responsive from any device, pc or mobile. The content organisation is divided into subsections, each accessible from the main menu.

RETENTION uses Google analytics to generate detailed statistics on visitors to the website. In addition, a SEO yoast plug-in was installed on the website to better potential each page of the website with keywords. Specific keywords were used for each page to increase and improve the results in search engines. The site complies with all regulations of Privacy Policy, Cookie Policy and is GDPR compliant.

6.1.2 Web Site structure

The website is fully responsive, and the architecture is as follows:

1) HOME
2) PROJECT
   a) RETENTION
   b) Work packages
   c) Media Kit
   d) Deliverable & Publications
3) PARTNERS
4) NEWS
5) CONTACT

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HOMPEPAGE AND FOOTER

RETENTION's website opens the homepage with an ad hoc video that tells the story of the creation and assembly of the logo.

The three key elements are:

REAL: the heart emblem of research, studies and the core of the project

WORLD: symbol of connection towards research, concreteness and project studies, connecting not only the partners, but also all potential users.

DATA: The cloud is a reference to current technologies, to the power of servers, to the revolution of the ease of storage in data centres, which are increasingly powerful, intangible.
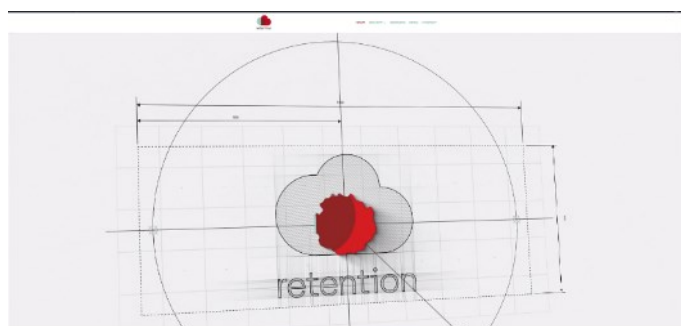
Figure 10: Screenshot video header Homepage: creation logo

The footer is located on every bottom page of the website and visually presents all the logos of the partners involved in the project. By clicking on the logo of each partner, the user of the site will be redirected to the "Partner's" page, which contains the list and a brief description of the institution/company. Each one has a link to its own institutional webpage. The flag of the European Union is always present with the caption on the HORIZON2020 call for proposals. Finally, the project coordinator's contact information and references to the social media channels on: Facebook, Twitter and LinkedIn.

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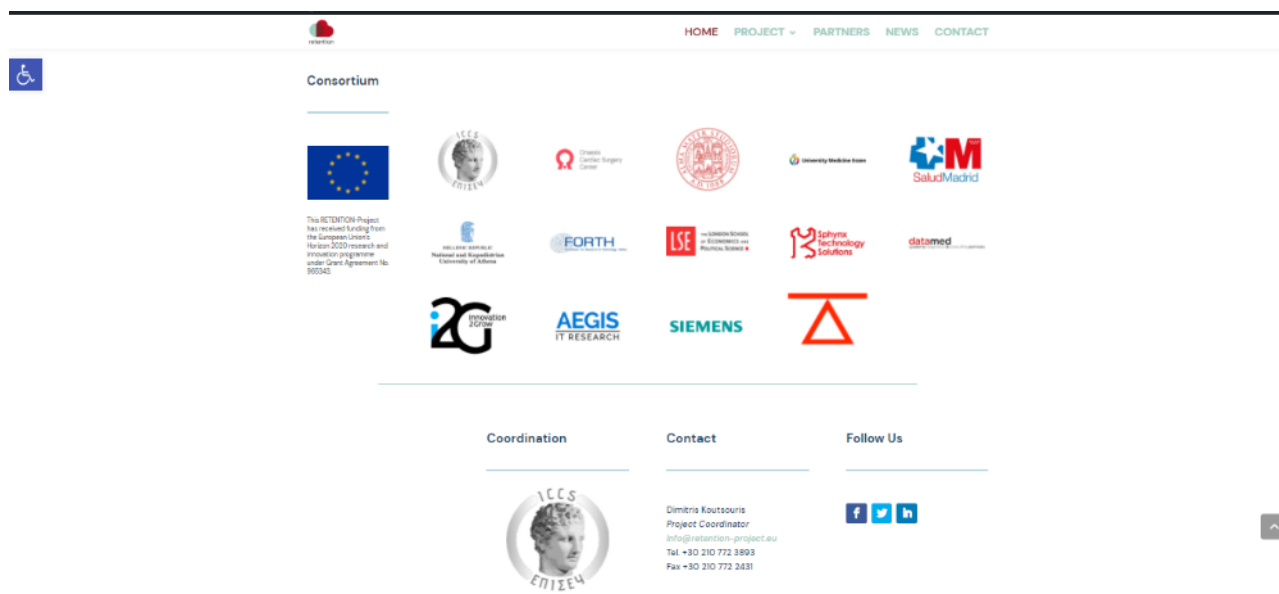
Figure 11: Screenshot Footer

This is followed by the project's mission and vision. A summary of RETENTION's focus: exploiting the technological convergence of state-of-the-art technologies, to develop innovative, transparent, and sophisticated decision-making capabilities and deliver personalised effective interventions for severe heart failure disease.
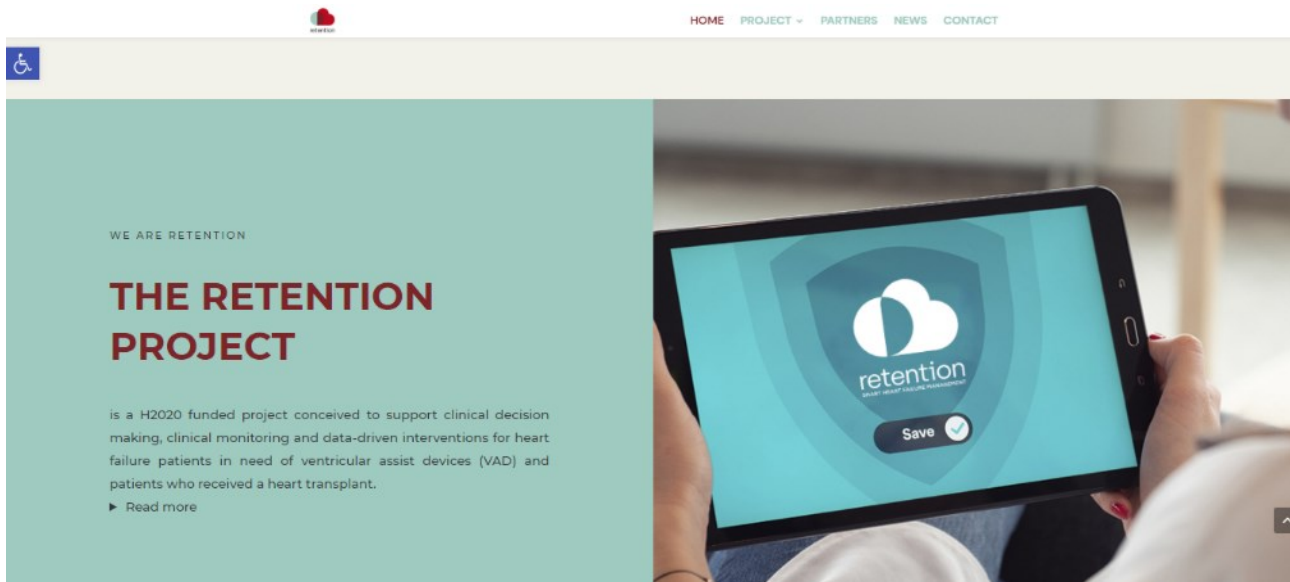
Figure 12: Homepage Screenshot: Mission

Scrolling down we can find a layout that incorporates a specific infographic that illustrates, in a simple and immediate way, the model underlying the RETENTION project.
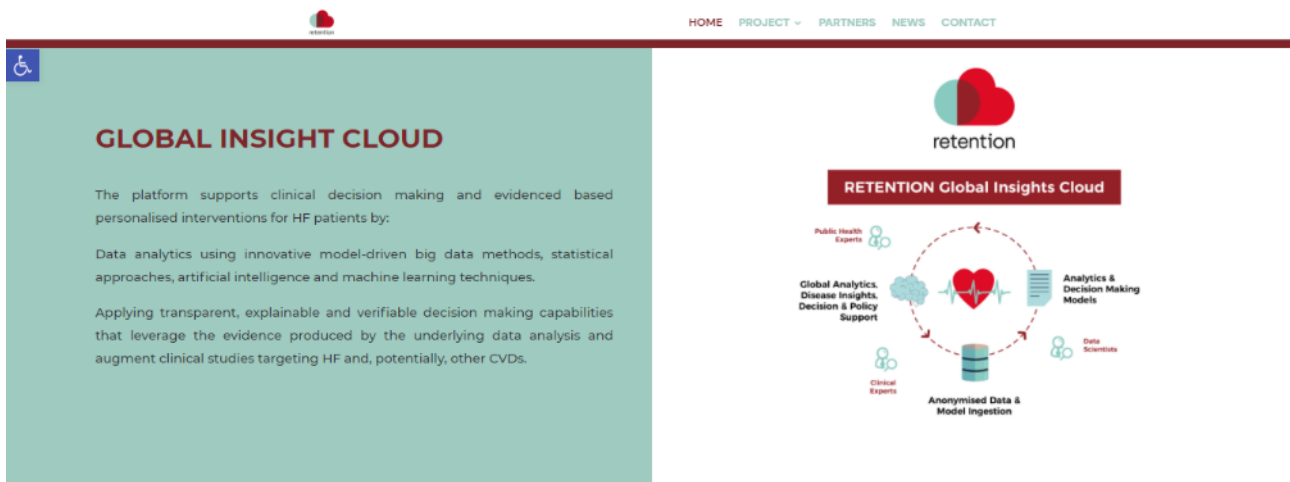
Figure 13: Homepage Screenshot: Infographic about RETENTION Project and process

PROJECT

The Project menu item is divided into 4 sub-pages:

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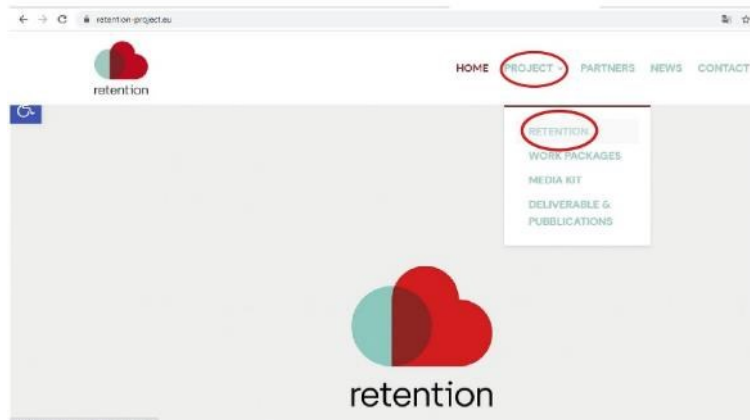
Figure 14: PROJECT Page Screenshot Sub – Menu

1. RETENTION

The RETENTION page, located under the Project menu item, is a graphic summary of the development and the heart of the RETENTION project. It is a way of making the content accessible to users of the site, who can view a graphic concept map of the project's key points, as well as having a textual shoulder to facilitate comprehension.
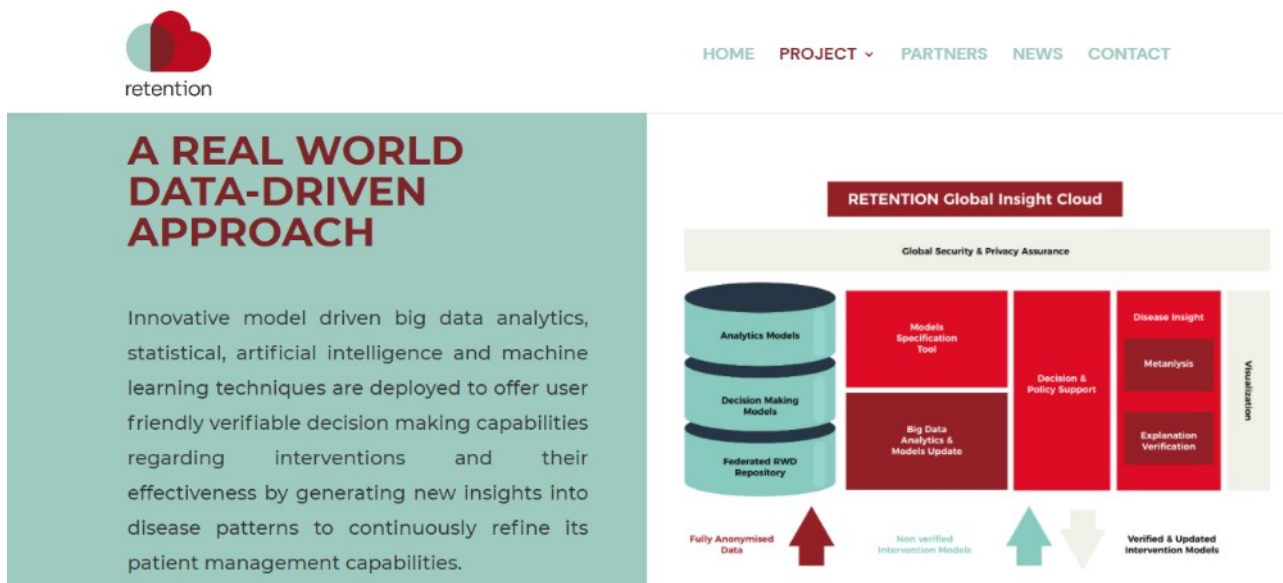
Figure 15: RETENTION Page Screenshot

2. WORK PACKAGES

This page indicates the work packages' subdivision, their description, and the work package coordinator.

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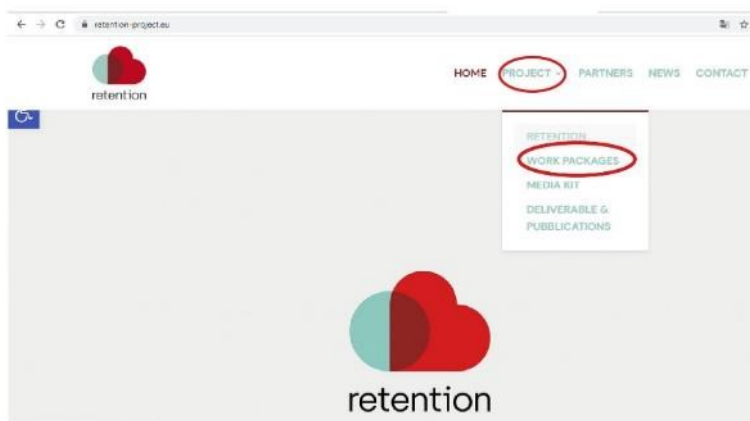
Figure 16: WORK PACKAGES Page Screenshot Sub - Menu

Figure 17: Layout Work Packages Page Screenshot Sub – Menu

3. Media Kit

In this section, the communication materials produced along the project are available for download, e.g. banners, roll-up, logo, etc.

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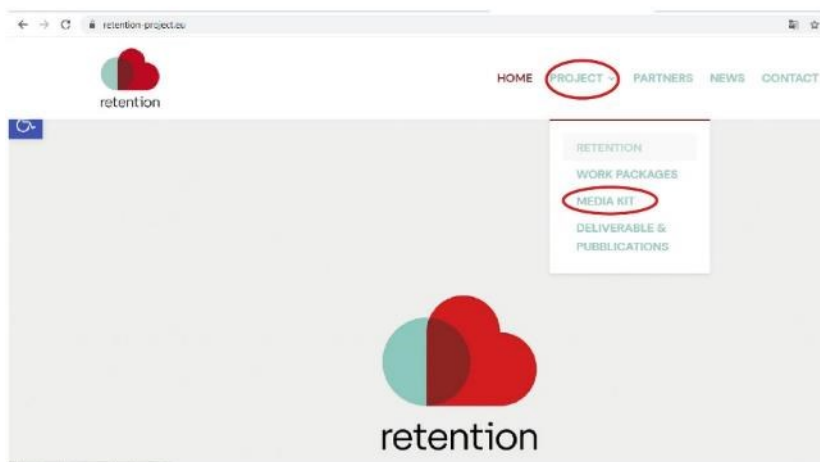
Figure 18: Media Kit section

Figure 19: RETENTION Page Screenshot: Media Kit

4. Deliverables & Publications

On this page progress bars will be inserted whose percentage shows the status of what has been produced at the level of Dissemination and communication plans and Publications. Once the public deliverables have been submitted, they will be uploaded to this page and made available to all interested parties.

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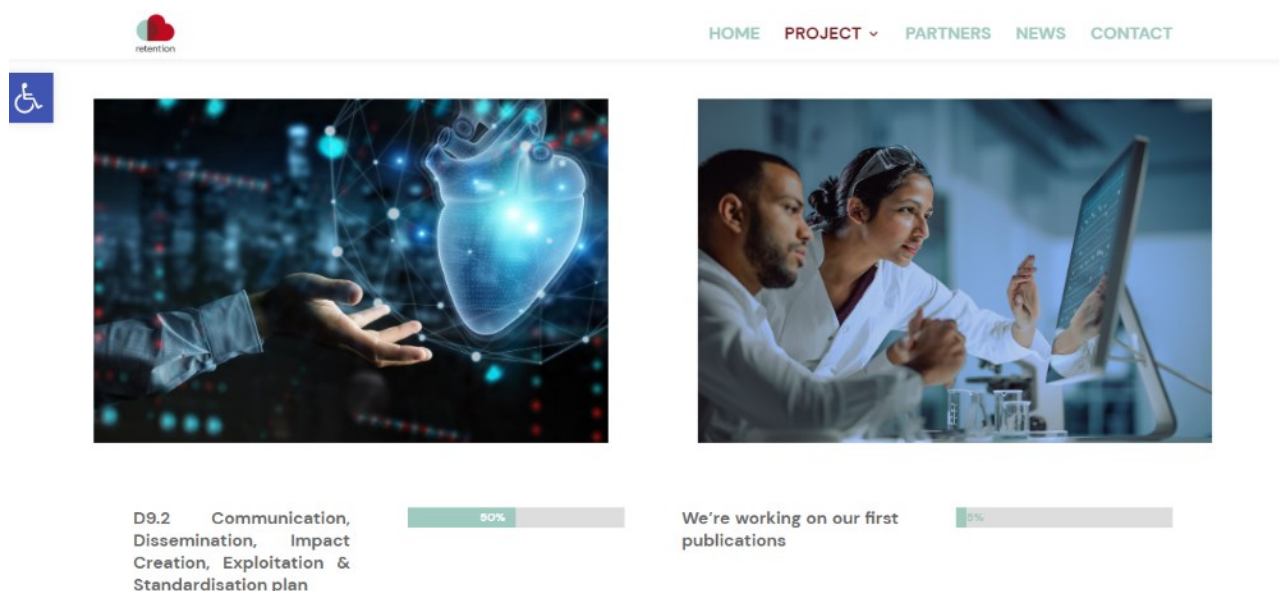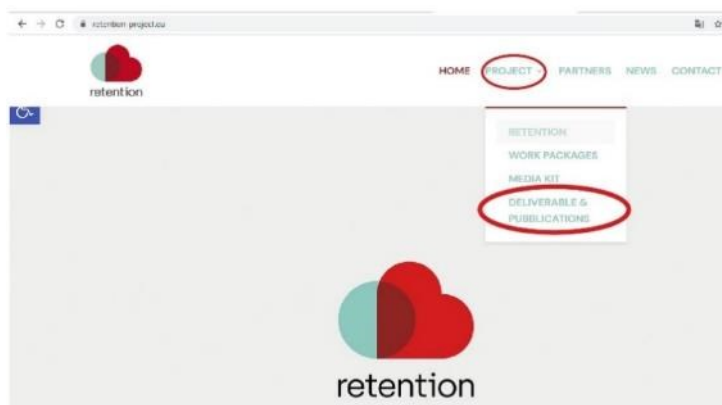
Figure 20: RETENTION Page Screenshot: Deliverables & Publications

PARTNERS

The partner page has been designed with a dynamic and user-friendly layout. The special feature is the interactive map of Europe, on which the various partners are located according to the country of reference. Each point on the map corresponds to a partner. When you move the cursor over the point, the partner's official logo appears, and clicking on the logo takes you to the lower part of the page, which contains a detailed description of the company and a direct link to their website.

A dynamic, fresh and up-to-date page layout that also makes the content very user-friendly.

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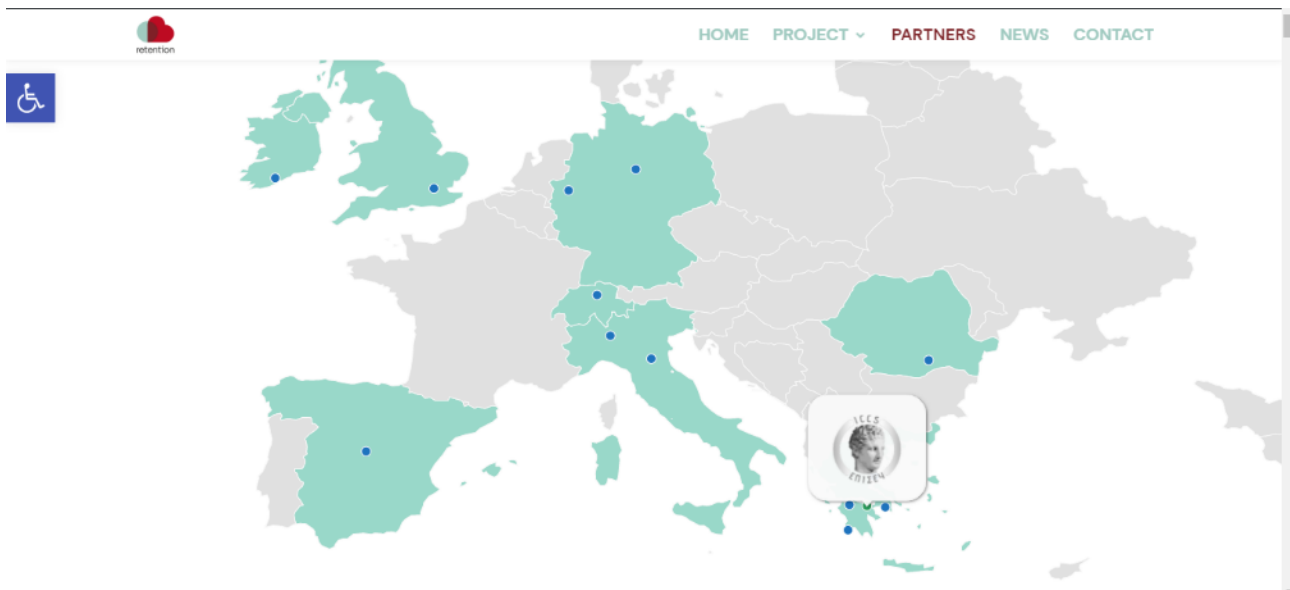
Figure 21: Partners location screen shot
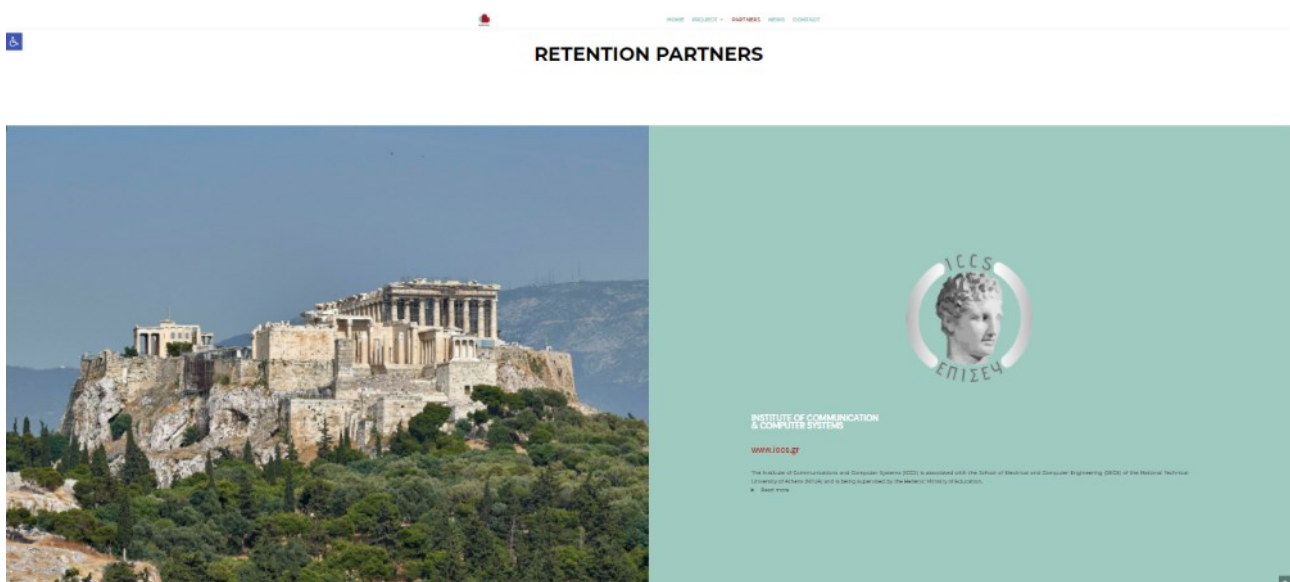
Figure 22: Partners description screenshot

NEWS

In the News section, all updates about the RETENTION project will be posted and displayed. The graphic layout is designed to give an immediate overview of all the news uploaded, showing the preview. By clicking on this, users will be redirected to the full content of the article.

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Figure 23: News page screenshot

A social wall has been added to show posts from the project's social networks: Facebook, LinkedIn, Twitter.

All interactions of the posts will be shown, as a virtual square where comments, likes and retweets will be visible to all.
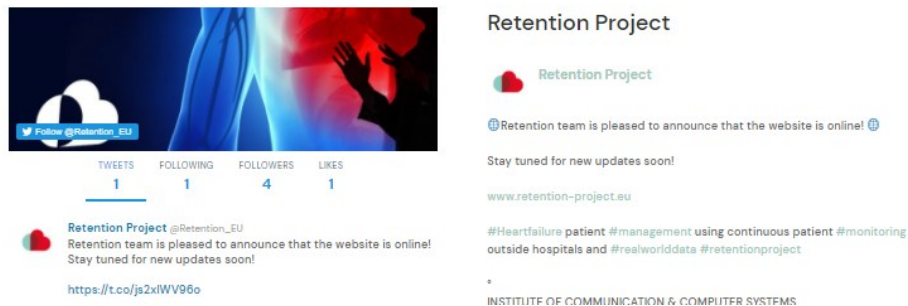
Figure 24: Social wall screenshot

CONTACT

On the Contact page, users can get in touch very quickly and directly with the project team thanks to the contact form. The general email info@RETENTION-project.eu is repeated on every page of the site facilitating the initial approach with anyone interested in the RETENTION project.

Figure 25: Contact page screenshot

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Figure 26: Contact form screenshot

One way to create an active community around the RETENTION project was through a CTA button inviting people to subscribe to the newsletter. This newsletter will allow users to stay up-to-date on any progress. Finally, users can find the footer on each page, as well as the references of the project coordinator, general email (the right way for a lasting communication with all those interested in this project) and social media buttons - this expresses the reachability to the curators of the project website.

6.2 Social media

In order to differentiate and make the target audience more varied, four social media channels have been opened for the RETENTION project: Facebook, Twitter, LinkedIn, YouTube. This choice has been reasoned to expand the range of the project outreach reaching different targets. The content that will be produced for each social media channel will be different in terms of tone, mood, messages. Each official social channel of RETENTION will be followed by all partners of the project and each post will be reposted using mentions and hashtags consistent with the objectives of the project.

All project partners who have social media accounts will follow the other profiles, reposting or retweeting consistent content, tagging and mentioning RETENTION 's profile. All social media icons have been placed in the footer of the retention-project.eu website. The profile images contain the official logo and the cover contains all the elements that make up the logo in its entirety, also indicating the keywords of the project's mission, a reference to the infographic homepage of the site. All social profiles have been customised following the same criterion of consistency to make them immediately recognisable.

The ResearchGate media channel, a professional network where scientists and researchers can share and access scientific content, knowledge, and expertise, will be activated in a later stage of the project to properly showcase and share the innovative results achieved by RETENTION.

A brief description of each social media channels already activated for RETENTION is given below:

Facebook

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Social Channel: Facebook	Facebook has a very large user base. The users who frequent this social network have a wide range of interests and are looking for light, informal and easy content.
Target Audience:	Facebook is a social media that brings together users who want to be informed in a light, spontaneous and playful way. It gathers a very large pool of users with a wide range of interests, equally divided according to gender. It is a type of user that prefers the visual impact of images and emoticons in the contents offered. Considering the type of social channel and the needs of its users, the Facebook Retention page will generate content suitable for this type of audience, also leveraging the visual and emotional part of the channel.
Posts/messages:	The posts created for Facebook will have an informal and light communication style. They will convey updates about the Retention project. Emoticons will also be used to make the style more appealing to the type of audience that generally uses this type of social network. The aim is to gather an increasingly profiled user based on their interests, thus generating a sense of community around the project and the Retention core. The Facebook Retention page will follow all partners involved in the project. Each post will then be re-shared, generating "noise" around the page. In this way, the contents of this page will be conveyed and read by users with already defined interests. Thanks also to the social campaigns, it will be possible to shape a "typical" user based on gender, interests, geolocation, and profusion.
Official Name:	@RetentionProject
Official #:	#retentionproject
Hashtag topic area:	#health #technology #H2020 #dementia #hearfailure #prevention

Figure 27: RETENTION Facebook page

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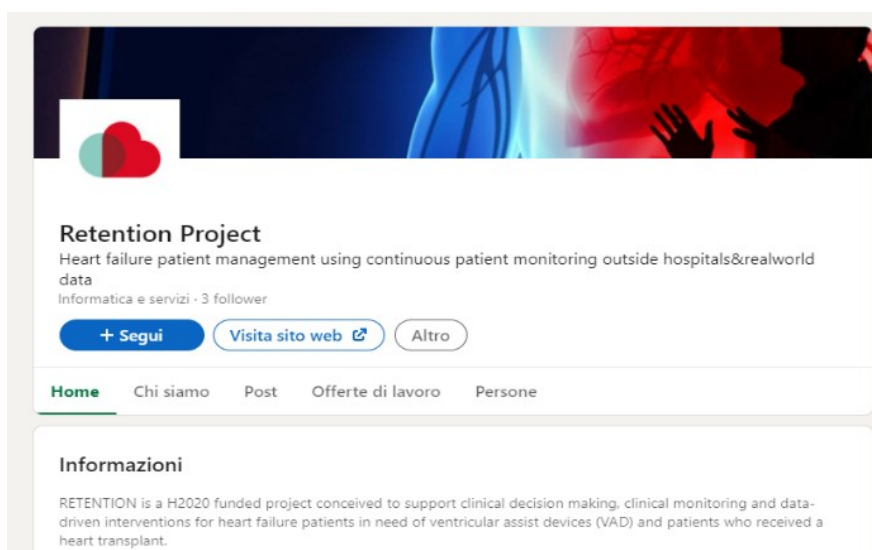
LinkedIn

Social Channel: LinkedIn	LinkedIn is the most popular social network for business, visited by thousands of professionals every day. Its purpose is to enable interconnections between individuals in the business environment. A sort of virtual square where professionals connect with each other for business purposes
Target Audience:	LinkedIn's target audience is professionals, large corporations, opinion leaders, influencers and recruitment agencies who connect and share with each other. LinkedIn is a platform that enables marketers and sales people to build relationships with professionals. Thus, users set up their profiles around job details and are receptive to detailed technical updates. The LinkedIn page of Retention will follow all the profiles of the associated partners, sharing updates about the project with each other. This will allow to reach a selective target group based on business interests.
Posts/messages:	Considering the very specific profile and interests of this social network, the content that will be created will have a "tone of voice" appropriate to the context: updates, even detailed, about the progress of the project and research, in the technological and health fields. Although this social network has a serious and professional slant, it is important to capture the attention of users through well-constructed images. It is important not to be self-referential and to actively involve users through curiosity pills.
Official Name:	@Retention Project
Official #:	#retentionproject

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Hashtag topic area:	#health #technology #hearfailure #prevention #H2020 #retentionproject

Figure 28: RETENTION LinkedIn page
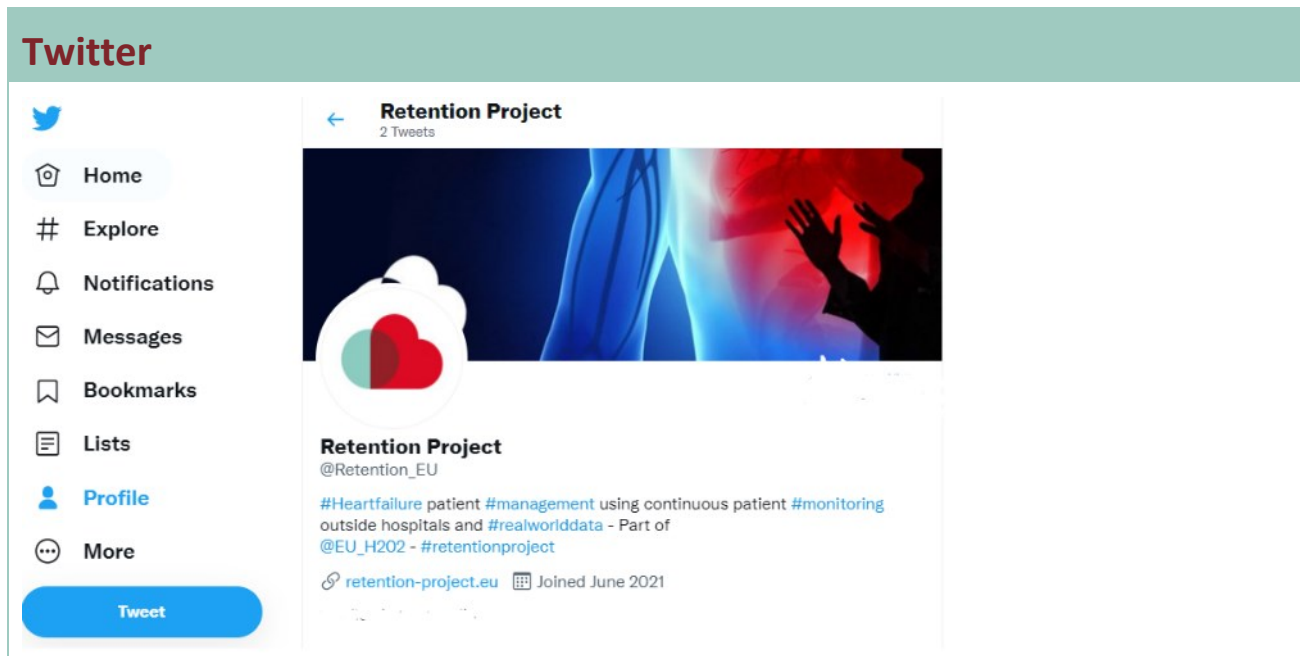
Twitter

Social Channel: Twitter	Twitter is a social network and a microblogging service for real-time communication used by millions of people and companies. Twitter users stay connected to each other by posting updates, called 'tweets', through which they share, exchange and find out information or news on any subject: recreational, political, professional. Tweets can have a maximum length of 140 characters and can contain ideas and various types of information, including photos, videos and links to articles. It is a fast news channel.
Target Audience:	Twitter is a social media that allows you to get in close contact with your audience, creating an immediate and friendly relationship. With just a few characters, you need to get in touch with the user. Thanks to the hashtag topic area, we will be able to reach users profiled by professional and personal interests. Each Retention Project partner will follow the official twitter profile, reposting or commenting on the contents. This will help in the profiling of an ideal user, outlined on interests in line with the project and related topics.
Posts/messages:	Twitter is a highly content-driven social network despite the brevity of the content. The focus is on the immediacy of the message and the image. It is possible to tag up to 10 users in the content of the post, involving people directly interested in the message who can then spread it in turn. Updates on the project and news will be shared. The posts are intended to spread knowledge about the core of the project in a few lines but in an effective way. Very important a high-impact image and a short but engaging text returns.
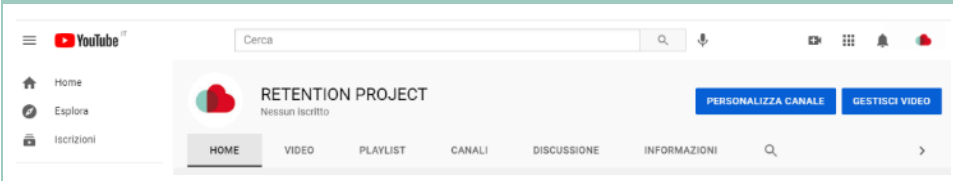
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Official Name:	@Retention_EU
Official #:	#retentionproject
Hashtag topic area:	#health #hearfailure #monitoring #H2020 #realworlddata

Figure 29: RETENTION Twitter page

YouTube

Social Channel: YouTube	Youtube is a web platform for publishing and sharing videos. It is the second most visited website in the world, after Google. Here the type of content is made by videos accompanied by short descriptions.
Target Audience:	The target audience of YouTube is generally made by young people and mostly men. Users upload their own videos and enjoy the videos of others.
Videos/post:	RETENTION has created its own official channel where videos will be uploaded with updates about the project and the progress of the studies. Each video will be uploaded to the official YouTube channel and will also be reposted as news on the website. To generate further views, posts will be created on all other social networks such as Facebook, LinkedIn and Twitter to drive traffic to the YouTube page.
Official Name:	RETENTION PROJECT
Official #:	#retentionproject
Hashtag topic area:	#health #hearfailure #monitoring #H2020 #realworlddata

Figure 30: RETENTION YouTube page

6.3 Scientific journal publications

Scientific publication activity of the partners will be performed in compliance to the provisions of the project's Grant Agreement and Consortium Agreement. RETENTION partners (research/academic, technical and clinical) will carefully select the project's publication venues based on their scientific excellence and impact, always opting for open access publishing. Potential journals that will be targeted for scientific dissemination are listed in the following table. It is expected that the number of project publications will be gradually increased, along with the project progress and as more results from the clinical trial become available.

Table 4: Indicative Journals for RETENTION dissemination

Title	Publisher
European Heart Journal	Oxford Academic
ECS Heart Failure	Heart Failure Association of the European Society of Cardiology
Elsevier Artificial Intelligence in Medicine	Elsevier
Elsevier Artificial Intelligence	Elsevier
Elsevier European Journal of Preventive Cardiology	Elsevier
Cognitive Psychology	Elsevier
Multivariate Behavioural Research	Taylor & Francis Online
Cognitive Sciences	Wiley Online Library
Behaviour Research and Therapy	Taylor & Francis Online
International Journal of Big Data and Analytics in Healthcare	IGI Global
Motivation and Emotion	Springer Science
Image and Vision Computing	Elsevier
BMC Medical Informatics and Decision Making	Biomed Central
Information Processing and Management	Elsevier
Journal of Nutrition Education and Behaviour	Elsevier
Springer Quality and User Experience	Springer
Journal of Health Services Research and Policy	Sage Publications, Inc.
Multimedia Tools and Applications	Springer
International Journal of Cloud Computing	Inderscience Enterprises Ltd.
Research in Organizational Behaviour	Elsevier
IEEE/ACM Transactions on Audio Speech, and Language Processing	IEEE Signal Processing Society
Biomedical and Health Informatics	IEEE
IEEE Transactions on Big Data	IEEE
IEEE Transactions on Knowledge and Data Engineering	IEEE
IEEE Transactions on Signal Processing	IEEE
IEEE Transactions on Image Processing	IEEE
IEEE Transactions on Intelligent Systems	IEEE

Title	Publisher
IEEE Transactions on Biomedical Engineering	IEEE
Universal Computer Science Journal	Technische Universität Graz
Computers in Industry Journal	Elsevier
International Journal of Medical Informatics	Elsevier
International Journal of Technology Assessment in Health Care	Cambridge University Press
JMIR mHealth and uHealth Journal	JMIR Publications
BMC Public Health Journal	BMC
The New England Journal of Medicine Journal	Massachusetts Medical Society
Informatics for Health and Social Care	Taylor & Francis
Social Science & Medicine Journal	Elsevier

6.4 Symposia and Conferences

The RETENTION consortium is planning to organise a minimum of two (2) workshops targeted to the relevant research communities, as well as the domain stakeholders. The consortium, in order to target a better effect on the phase strategy is focusing also, at different levels of promotion, to approach the target audiences identified with an EU, international, micro-level focus.

The table below includes possible events, until 2022, that can potentially host the RETENTION workshops. The table related to suitable conferences will be updated at least once a year until the completion of RETENTION in 2025.

Table 5: Events that can potentially host RETENTION workshops

Organised by	Date	Location
Intelligent Health AI, Heart Failure and Heart Rhythm Diseases Conference	12/10/2021	Amsterdam, Netherlands
International Conference on Automation and Artificial Intelligence	24-25/06/2022	Toronto, Canada
International Conference on Big Data in Biomedicine and Healthcare ICBDBH	24/05/2022	Barcelona, Spain
International Conference on Heart Failure and Cardiology	03/05/2022	Rome, Italy
ACM Conference on Human Factors in Computing Systems	30/04/2022	New Orleans, USA
IEEE Engineering in Medicine and Biology Conference	11/07/2022	Glasgow, Scotland
ACM Symposium on Spatial User Interaction	9-10/11/2021	Virtual

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Organised by	Date	Location
International Conference on Biomedical and Health Informatics	29/07/2022	Istanbul, Turkey
IEEE Conference on Virtual Reality and 3D User Interfaces	12/03/2022	Christchurch, New Zealand
IEEE Big data congress	15-18/12/2021	Virtual
International Conference on Healthcare & Life-Science Research	19-20/11/2021	Kent Ridge Guild House, Singapore
IEEE Int Conference on E-Health and Bioengineering	18-19/11/2021	Iasi, Romania, Virtual
IEEE Conference on Quality of Multimedia Experience	To be announced	To be announced
ICMR/ACM International Conference on Multimedia Retrieval	16-19/11/2021	Taipei, Taiwan, Virtual
ACM Conference on Human-Computer-Interaction with Mobile Devices and Services	To be announces	Vancouver, Canada
ACM International Conference on Research and Development on Information Retrieval	11-15/07/2022	Madrid, Spain
International Conference on Information and Knowledge Management	1-5/11/2021	Queensland, Australia, Virtual

6.5 Newsletters

The project electronic newsletters will be released twice a year and will provide information related to the main events, progress, and outcomes of the project. i2Grow will be responsible for the newsletter design, content curation and subscription database management in compliance with the GDPR legislation. All the other partners will collaborate in the production of the content that will be included in each release.

The first newsletter will be issued by the end of November 2021 and will be mostly focused on the results of the RETENTION users' requirements analysis that will be concluded by that time. To attract as many subscribers as possible, the month before the first newsletter publication an ad hoc social media campaign will be lunched communicating catchy messages to invite stakeholders to subscribe to the RETENTION newsletter.

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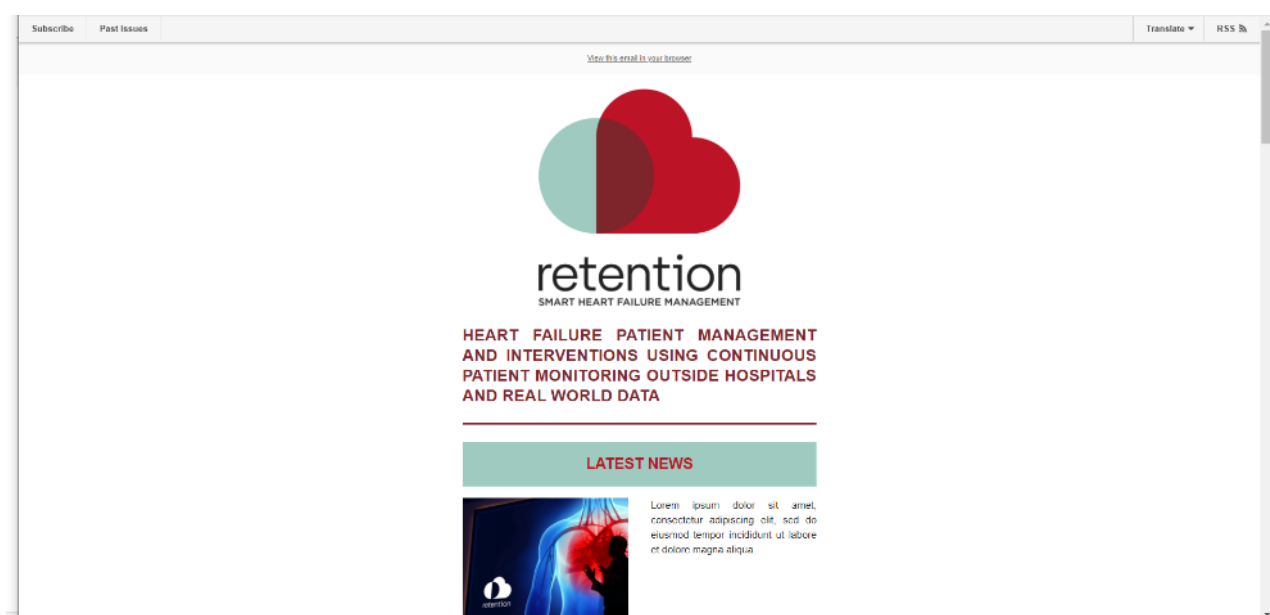
Figure 31: The Mailchimp template of the RETENTION newsletter

6.6 Videos

Making use of the project YouTube channel, the project will promote audio-visual materials to boost the communication around RETENTION achievements. Two videos will be developed during the project's duration:

- during the second year of the project, a video will be prepared to present a general description of the objectives and outcome of the project to create awareness of RETENTION at the civil society.

- during the third year of the project, video interviews from the key technical and clinical partners of the consortium will be delivered to create awareness of RETENTION at the scientific society.

6.7 Presentation materials

All project's presentation materials are conceived in English and developed in an editable manner, so that their content can be adapted to the project's evolution and, if needed, translated in partners' local languages to better impact dissemination needs on each addressed territory.

All the project's presentation materials will be uploaded on the project website, in the Media Kit section.

The RETENTION flyer and brochure, aim at presenting an overview of the project for a general audience, its objectives, expected impacts and the consortium partners in a visually appealing way. Those materials will be developed on a later stage, not later than the end of the project's first year.

The project's roll up, to be used in exhibitions organised within scientific/technical events, has been already developed and is proposed in two versions: one focussing on the solution technical modules and one on the activities flow between the different modules.

6.7.1 The project Roll-Up

The two versions of the RETENTION roll-up.

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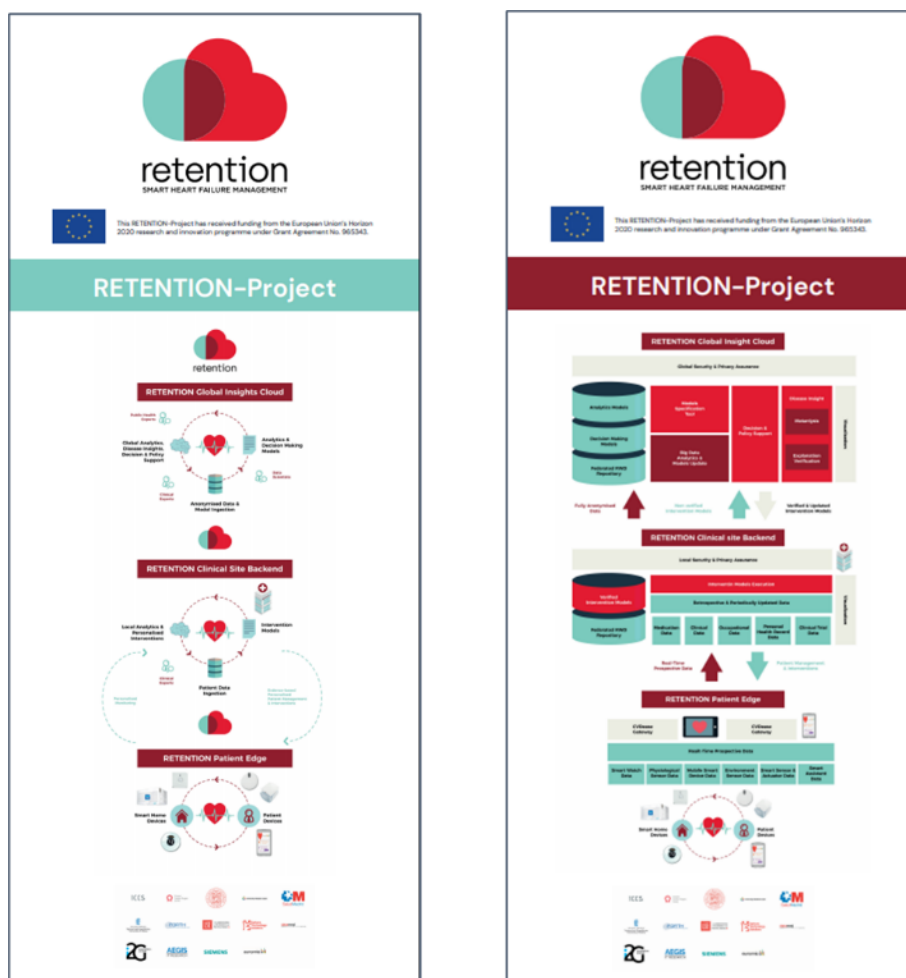
Figure 32: RETENTION roll-up versions

6.8 Press Releases

The RETENTION press releases will serve as an effective tool, for promoting the significant outcomes of the project and services. These will be released when the project reaches significant milestones and will be composed in a manner giving key information but in a very crisp and impactful manner.

At least 5 press releases are foreseen during the project life time, focusing on relevant project's events and achievements such as:

- project start,
- RETENTION architecture completed,
- start of the clinical trials,
- outcomes of the validation phase,
- RETENTION final results achieved.

The press releases will be distributed to national/regional/EU press officers to make the project more widely known, will be made available on the retention-project.eu website and promoted on the various social media channels.

The project press releases template is included in Annex 2.

6.9 Project's templates

A series of document templates, all inspired by the RETENTION visual identity, have been created and made available to the project's partners. Those templates are intended to enhance the RETENTION unified and cohesive appearance. In addition to the layout, they contain indications about the style, font and icons to be used.

6.9.1   Power Point presentations

In order to make graphically homogeneous the official communication of the RETENTION project during institutional presentations, events or meetings, a Power Point with Slide Master has been created.
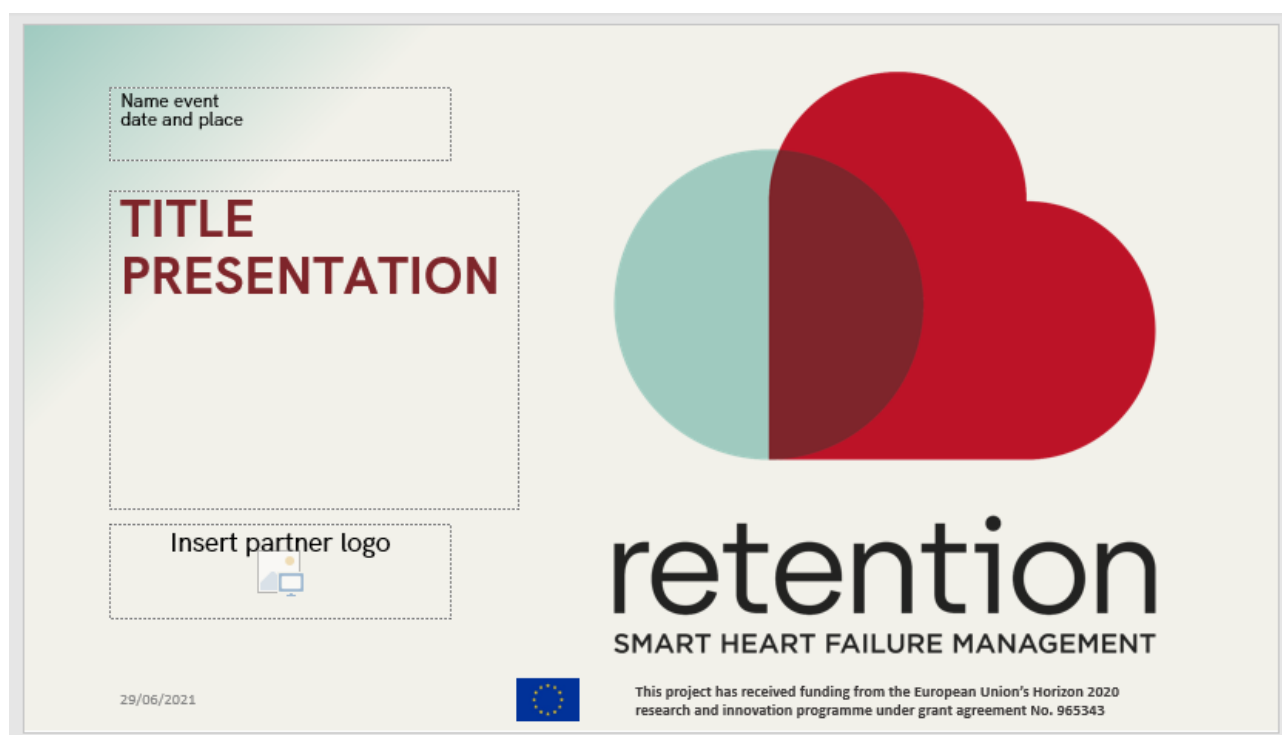
Figure 33: Power Point template

6.9.2   Deliverables

The deliverable template (see Annex 3) is the official template that is in use and will be used for preparing all the project's deliverables.

7 Communication and dissemination monitoring procedures

Monitoring of the results of the actions implemented with respect to the key performance indicators defined, to ensure the effectiveness and efficiency of the project in achieving its communication and dissemination objectives is essential to facilitate an appropriate management of those activities, to adjust the dissemination and communication strategy and to promptly implement mitigation actions if this strategy demonstrate any weak points.

7.1 Monitoring and reporting

A tool for monitoring and reporting of communication and dissemination activities is provided to all partners in the format of a spreadsheet (see Annex 4).

All partners are requested to collect and report information, links and supporting documents related to the communication and dissemination activities they have carried out every six months.

Such information is processed, analysed and reported by i2Grow in the reporting due to the EC as from the project's Grant Agreement.

The tables below summarise the Key Performance Indicators (KPI) and respective targets the consortium aims to achieve per each of the communication tools, actions and channels illustrated in the previous sections.

Table 6: RETENTION Dissemination and Communication activities and KPIs

Communication means	KPI
Project website	1 website (deployed M2, maintained ≥3 years after project end)
Newsletter	≥8 newsletters
Press release	≥4 press releases
Scientific Communities, Social Research Networks and Social Networks	4 project accounts in Social Networks (LinkedIn, Facebook, Twitter, YouTube), ≥100 connections/followers on each
Video	1 You Tube channel, ≥2 project videos
Presentation Materials	≥2 flyers, ≥2 brochures, ≥2 roll-up, ≥2.000 hard Copies
Traditional media	≥1 articles/interviews to national magazines and/or newspapers per participating country

Table 7: RETENTION dissemination-specific activities and KPIs

Communication means	KPI
Project website	≥1.000 accesses annually ≥100 downloads

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Communication means	KPI
Scientific Communities, Social Research Networks and Social Networks	≥50 posts
Technical Brochure, Flyer & Roll-up	≥2 flyers, ≥2 brochures, ≥2 posters, ≥2.000 hard copies distribution in ≥ 10 events. ≥500 downloads
Journal publications	≥6 publications
Magazine publications	≥ 8
Conference publications	≥ 12
Special issues in international referred technical and non-technical journals and magazines	≥2 special issues, ≥10 selected papers/issue
Organisation of International Scientific Events	
Workshops/Special Sessions	≥ 2 workshops/special sessions, ≥40 attendees
Demonstrators	
International industry event	≥1 demonstration
EU-focused event	≥1 demonstration
Technical/Academic Event	≥2 demonstrations
Networking - Outreach	
Interactive face-to-face networking	≥1 participation in relevant events per year
Collaborations with other projects	≥2 synergies established with pertinent EU project
Collaborations with policy makers	≥1 meeting with health policy makers per each clinical trial country involved in project ≥2 meetings with EU healthcare and/or patient associations

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8 EXPLOITATION Strategy and Plan

8.1 Exploitation activity plan

According to the DoA, the exploitation plan will be elaborated and continuously updated, aiming at maximizing the exploitation levels of the project, from the involved stakeholders. It includes eight phases (Figure 34): (i) market insights and business requirements' analysis; (ii) definition of project's value proposition; (iii) business requirements validation; during the period up to M15 of the project a survey to test market readiness of the first results (D3.2, D4.1, D5.1, D5.2) of the project will be performed.

The results will be validated by the External Advisory Board; (iv) elucidate business model/scenarios based on an initial version already presented in this proposal and creation of a revision of them in M24 (D8.3); (v) identification and exploration of open issues (T7.5); (vi) seek partners buy in, where partners will state which resources and investments they can commit to the project, and which roles they will accept in the post-project sustainability scenario; (vii) consolidation; (viii) go-to-market, long-term sustainability and potential commercialisation (Task 8.2).
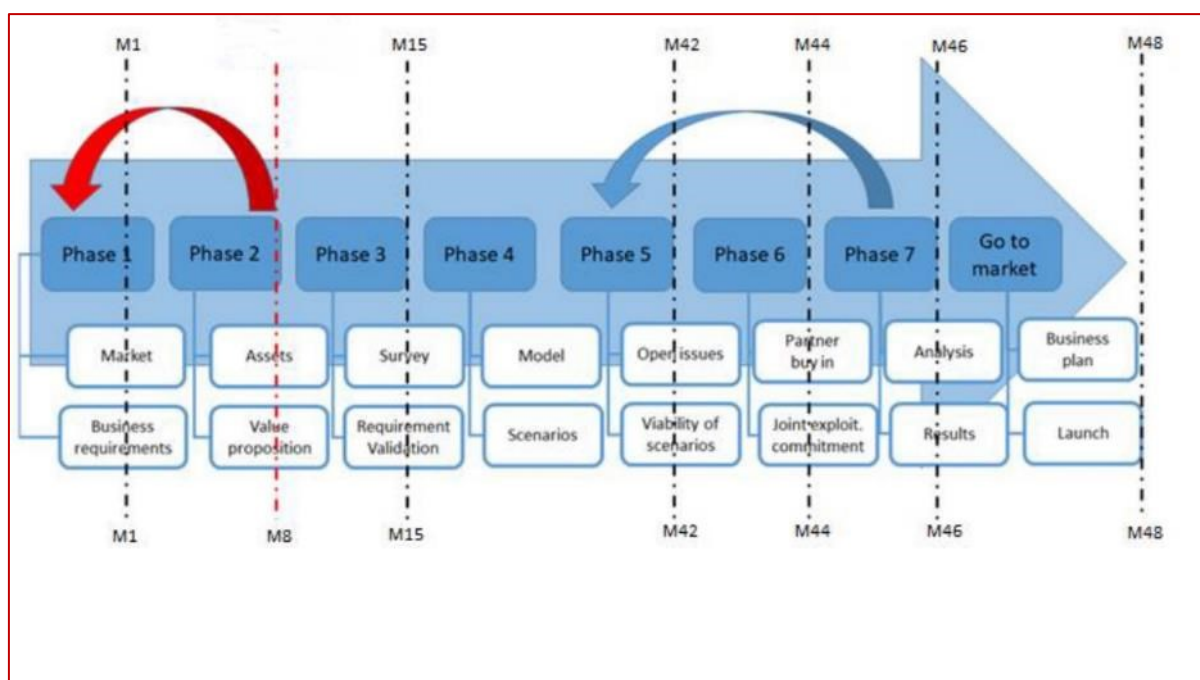
Figure 34 RETENTION Project Exploitation phases

Phase 1 and Phase 2

D9.2, due on M5, cover the Phase 1 of the roadmap and partly the Phase 2, thus the results of analysis carried out so far reflect the point in time of the Deliverable submission.

In first version of the document D9.2 some key aspects involved in the business model are analysed and a **methodology** is proposed to drive the Exploitation relevant activities along the project.

The exploitation activities, including **market driven activities** such as **business plans and business models**, will be managed within WP9 but all the R&D relevant WP leaders will be involved and the Innovation Manager will support translating the Research outcomes into innovations leading to a market and stakeholders value

creation. As outlined in the figure below, the business relevant roadmap evolution will be reported in the D9.3.x to be delivered along the project.

For this reason, it's important in the current document to highlight the context in which the RETENTION exploitation team has to deepen the activities.
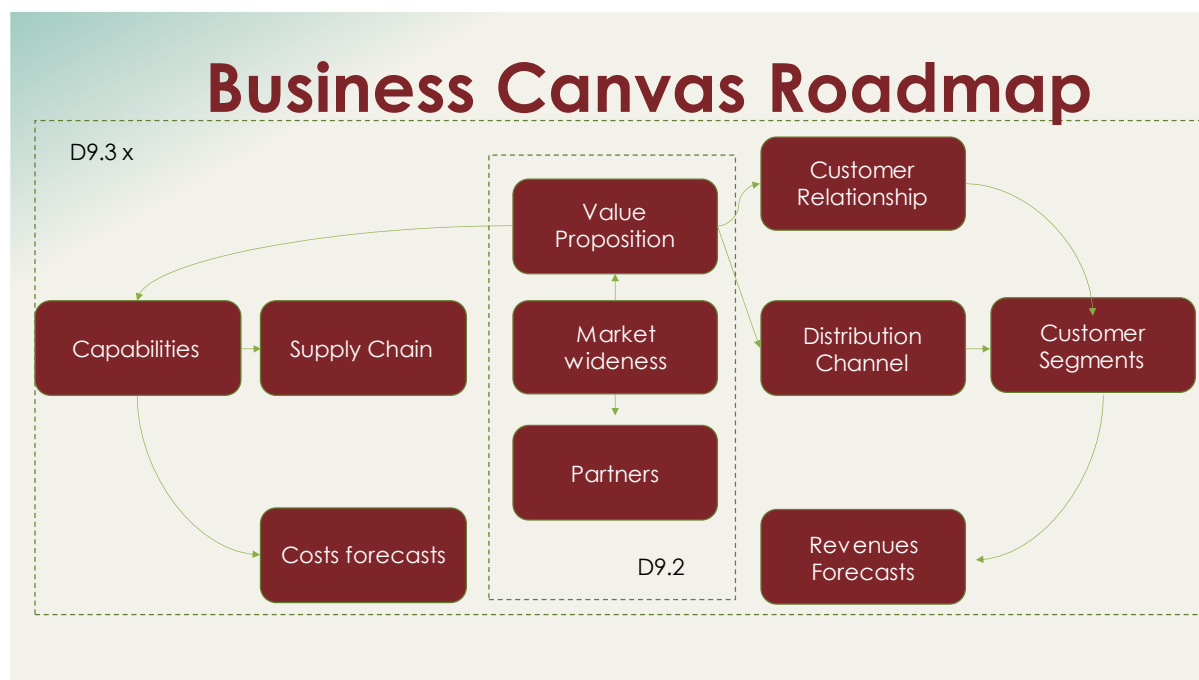
Figure 35: Business Canvas items developed along the project and reporting Deliverables

1. **The Value Proposition and how it will evolve**
2. **The Market Context and Wideness**
3. **The Partners' type to be engage along the project**

The 3 Business Canvas items evolution and the remaining aspects of the Business Plan will be studied in the next steps, leading to a second version of the deliverable (D9.3x).

8.1.1 Co-designing RETENTION Business Value proposition

A Strategic Design approach and methodology should be applied to articulate a business strategy along the project and in preparation of the post-project phase.

Business Value Proposition (BVP) methodology involves a design thinking approach as the one usually employed on the Innovation process. The Business Value Proposition, on the other hand, applies design thinking and methodologies on a business strategy level.

By establishing a methodology and operative actions early at project stage, will help embedding the model into the "market approach skills and toolbox" to be achieved by the partners at the end of the project.

In addition to the challenge of translating the RETENTION Research and technology strategy into a possible business to exploit, there are challenges that can be addressed and solved during the Research phase by involving key stakeholders able to represent the perspectives of the end-users and customers (not necessarily the same actors in the complex Healthcare sector) point of view to build a strategic framework for **value creation.**

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The business teams of the Industrial partners (SMEs and Large companies) involved in the project know that they need to increasingly innovate in an interconnected way in order to develop meaningful solutions by working across businesses instead of in silos, joining forces with external partners in new ways, and experimenting new business models. The RETENTION project is exactly the most suitable framework where these activities can be performed if duly organized and translated into a business context able to evolve day-to-day with the project evolution and increasing internal and external stakeholders' (Task 9.3) involvement.

To deliver meaningful solutions in a particular business domain, it's important to understand as early as possible, what drives customers and their experiences. A clear scenario of use, in which RETENTION offering is connected, relevant and applicable in society. This is what is needed first to start constituting a BVP.

Use cases and scenarios of use will be reported in D3.1 (Task 3.1) on M7, thus the deadline of M8 envisaged in the roadmap to define the BVP will be respected.

8.1.2 Multidimensional approach along project activities

To design the RETENTION BVP we will exploit an effective **six perspective model,** by building on Tom Kelly's well-known Venn diagram of design innovation aiming at finding out whether the expected outcomes are **Technologically feasible, Business Viable** and **Market desirable**. The six-perspective model includes:

1) The **industry perspective** (the project internal and external industry dynamics),

2) The **technology perspective** (the expected project technological and medical advancements)

3) The **people perspective** (the project activities detecting needs of end-users)

4) The **experience context** perspective takes how the domain is understood or experienced in the wider sociocultural context of its consumption into consideration.

5) **Society, culture and environment**. This allows to differentiate between project's scope and societal structures and developments.

6) The **Companies** that will drive the business out of project's results, since innovation is rooted in companies' positions, capabilities and assets. By including several EU companies' perspective in the business value proposition, we create a strong connection between propositions from different geographical areas, size of the businesses and addressable markets.

8.1.3 RETENTION BVP Industry and Technological Context

Chronic disease management is a significant segment of the eHealth market. Market changes and health care policy continue to emphasize **new models of care delivery**, as well as payment, focused on longer-term episodes of care and population management strategies.

Improving heart failure (HF) patient care and outcomes is an essential public health goal. HF is a syndrome producing marked changes in a patient's well-being, quality of life, and functional status.

These variables are typically assessed through brief, intermittent clinic visits. mHealth devices, combined with greater access to electronic health records (EHR) and patient portals, may allow a more comprehensive collection of these data and inform clinical decision making. Currently, patients with HF and clinicians have access to data from medical devices:

- in the clinic

- at the hospital bedside

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- from Internet of Medical Things (IoMT) such as commercial sphygmomanometers and scales, implantable cardioverter defibrillators and left ventricular assist devices (LVADs) that can be used to diagnose, risk stratify, and manage patients with HF.

Patients with HF are among those who have benefited most from device-based treatments. ICDs, pacemakers and CRT have revolutionised both mortality and symptom control and comprise standard guideline therapy around the world. Looking forward, HF patients will continue to have significant representation in the implanted device population, and thus likely stand to become test cases for new sensor technologies (Figure 364)
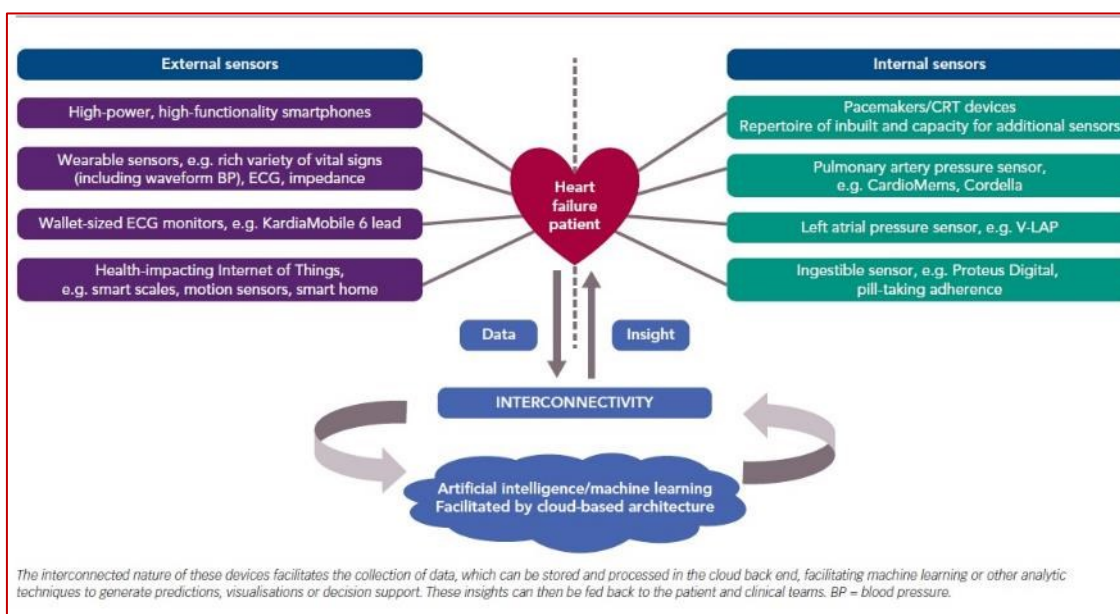
Figure 36: Overview of external and internal sensors relevant to HF (courtesy Cardiac Failure Review 2020;6: e11 https://doi.org/10.15420/cfr.2019.14)

In addition, **wearable devices** and **Real World Data** (RWD) from non medical sources such as:

- patient living space data (ambient light, temperature and humidity, indoor locations),

- patient living environment data (extreme temperatures and weather conditions, pollutants obtained from Copernicus services),

- patient outdoor movement and location data and sunlight exposure,

may be used in a similar fashion and on a larger scale to allow a broader spectrum of patient and clinician ongoing assessments that extend monitoring and care from the clinic and hospital to the patient living environment (indoor and outdoor) .

AI is also bringing important and previously inaccessible insights from conventional cardiac investigations, which are becoming increasingly accessible outside of the hospital setting. The interconnectivity, diverse sensor technology and AI tools set a course towards the ultimate goal of cost-effective, clinically beneficial closed-feedback loops. AI models can offer **decision support** and could be enabled to run autonomously in some instances. It will be a sum of different sensor technologies and their varied data outputs that will be able to realise the full potential of any interconnected AI tool. For example, modification of therapies in HF,

such as adjusting diuretic dosing, may be amenable to decision support from a ML model, trained and continually iterating at superhuman levels of accuracy by incorporating data streams from sensors.

Key technological and industry relevant trends addressed in RETENTION project having an impact also on the BVP are:

- the adoption of a human-centric approach that makes use of new technologies appropriately

- the empowerment for patients to improve the accuracy and efficiency of HF management

- the proof of widespread interconnected internal and external sensors for patient benefit and the demonstrated efficacy of data collection in real-world HF populations;

- the use of multimodal datasets processing with new AI tools for high quality, longitudinal HF care

- the propension to investments in infrastructures required to effectively maintain the services

- the required cultural changes to appropriately use new technologies to enhance HF care.

8.2 Market overview

The objective of the initial market overview, at the date of this deliverable, is to identify and prioritize the addressable market taking into consideration several macro market dimensions such as:

i. The EU countries' maturity on Telehealth-based models of care for HF

ii. The EU governments' priorities in HF care management and technological investments

iii. The identification of countries having a higher Hospitals per million people with cardiac transplant programmes as possible market indicator.

8.2.1 European Telehealth care models for HF

The Telehealth market has grown significantly in recent years. As of 2019, the Telehealth global market was valued at some 50 billion U.S. dollars. The market was forecast to grow significantly in the future when it was projected to be valued at nearly 460 billion U.S. dollars by 2030. Many factors have contributed to the growth of the market including increased traditional health care costs, funding for Telehealth and an increase in digital health users. Several HF care models using Telehealth have been developed across Europe [1] [2] [3] [4] [5]

However, the most recent driver was the COVID-19 pandemic. Before the COVID-19 pandemic, investment in Telehealth-based models of care for HF had not been a priority across Europe. The pandemic is widely recognised to have acted as a major catalyst for remote monitoring of HF, generating rapid uptake across whole systems and potentially leading to greater political will for the reimbursement of these care models to continue. While there is great potential in Telehealth models, especially to provide care to people living in rural or remote areas, it is important to consider that Telehealth should be used to supplement, not replace,

[1] Comín-Colet J, Enjuanes C, Verdu-Rotellar JM, et al. 2016. Impact on clinical events and healthcare costs of adding Telehealth to multidisciplinary disease management programmes for heart failure: Results of a randomized controlled trial. J Telemed Telecare 22(5): 282-95

[2] Nunes-Ferreira A, Agostinho JR, Rigueira J, et al. 2020. Non-invasive telemonitoring improves outcomes in heart failure with reduced ejection fraction: a study in high-risk patients. ESC Heart Fail: 10.1002/ehf2.12999

[3] Gallagher J, James S, Keane C, et al. 2017. Heart Failure Virtual Consultation: bridging the gap of heart failure care in the community - A mixed-methods evaluation. ESC Heart Fail 4(3): 252-58

[4] Andrès E, Talha S, Benyahia A, et al. 2016. Expérimentation d'une plateforme de détection automatisée des situations à risque de décompensation cardiaque (plateforme E-care) dans une unité de médecine interne. Rev Med Interne 37(9): 587-93

5 Köhler F, Prescher S, Köhler K. 2019. Telemedizin bei Herzinsuffizienz. Internist (Berl) 60(4): 331-38

in-person appointments. It should be part of HF care programmes, tailored to the person's needs and preferences.

Germany, Italy and Spain, countries represented with proxy customers/end-users in RETENTION project, **France and UK** have a large proportion of telehealth market revenue given that they are among the largest EU countries, it is also interesting to note that if we aggregate the telehealth market revenues of Denmark, Sweden, Norway and Finland, Scandinavia appears to be a dynamic region in the market with revenues of over 129m euros. This is nearly 9% of total telehealth market revenues.
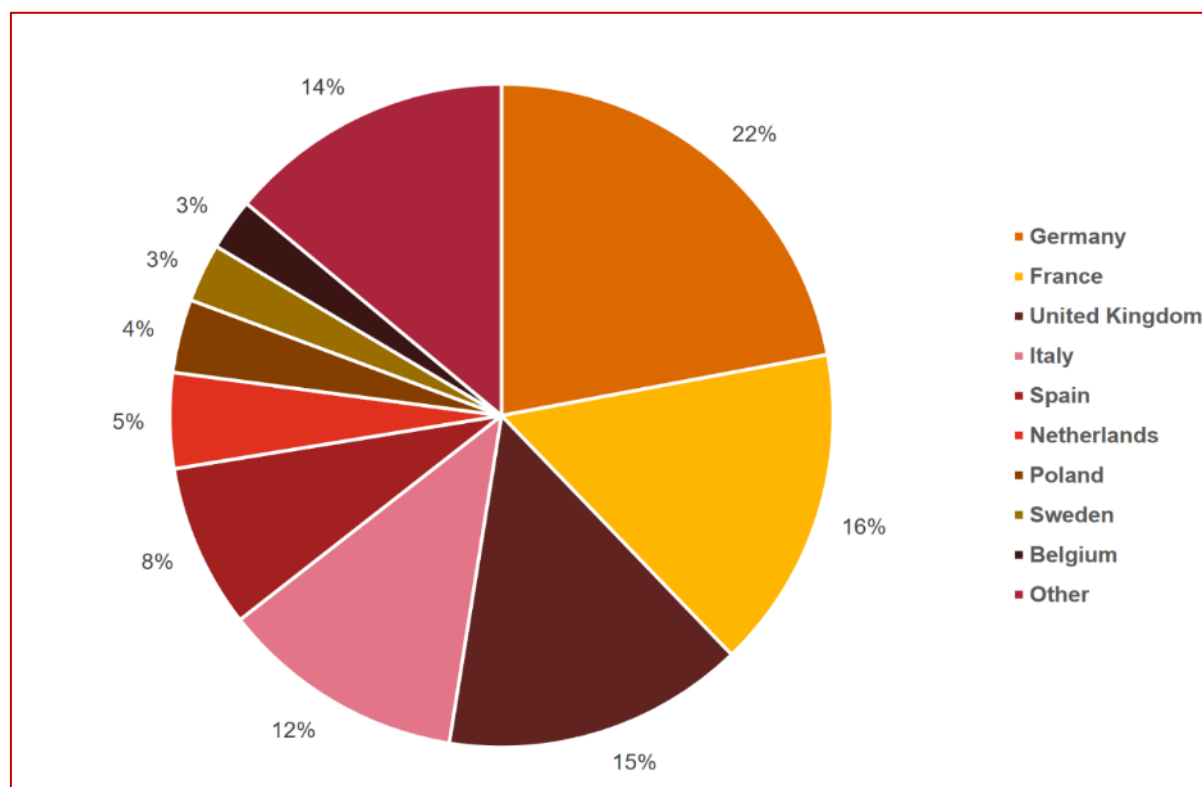
Figure 37: Telehealth revenue distribution in European countries (2016)

8.2.2 The EU governments' priorities in HF care management and technological investments

More than 15 million people in Europe, or around 2% of the population, are estimated to be living with HF. These numbers are predicted to rise significantly, due to ageing of the population and increased survival rates of other cardiovascular conditions. This trend seems certain to be accelerated by the COVID-19 pandemic. The pandemic has also caused widespread disruption to existing HF services, stalling crucial efforts to prevent HF or delay its progression.

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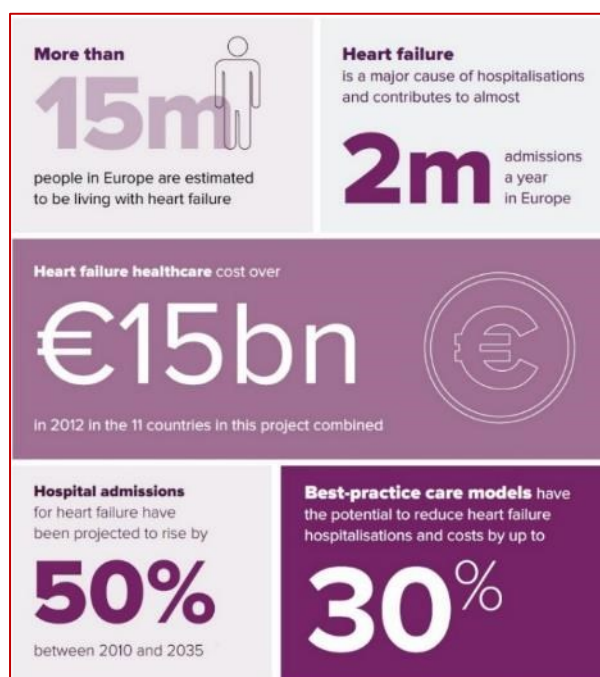
Figure 38: Courtesy of Heart Failure Policy Network. 2020. Heart failure policy and practice in Europe. London: HFPN

8.2.3 Drawbacks in HF care management generate opportunities for innovation

i. Despite the far-reaching impact of HF, governments have been slow to recognise its significance. Of the 11 European countries included in the Heart Failure policy and practice in Europe survey, most lack a dedicated strategy on HF, and where plans are available, they are often out of date or underfunded. Existing cardiovascular or non-communicable disease policy initiatives commonly neglect HF, despite it falling into their scope.

ii. Few governments fully understand what is needed to address HF. Formal registries and audits of HF care are lacking, meaning that poor performance and unwarranted variations often continue unchallenged, obstructing best-value investments to reduce avoidable deaths, disability and costs.

iii. Years of underinvestment in HF have left us unprepared for future pressures. Integrated HF care pathways, disease management models and key diagnostics are often unavailable, and **information technology (IT) systems and Telehealth platforms are often lacking or unfit for purpose**.

iv. Healthcare workforce is largely unprepared for HF. Specialist-led care is crucial to improving outcomes in HF, but many countries face major shortfalls in HF specialist roles. Few European countries formally accredit HF specialism, holding back the long-term growth of these roles.

v. Primary and community care settings are ill-equipped to provide effective long-term management of HF. Across Europe, crucial gaps include use of medications, cardiac rehabilitation, self-care education, psychological support and palliative care. Typical barriers include underfunding, poor continuity of care and limited access to HF specialists.

vi. These deficits come at a significant cost. Many people with HF are not treated until irreversible cardiac damage has occurred. **Hospital readmissions are common, despite a large number being considered avoidable**. Millions of patients live with a huge burden of symptoms – both mental and

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physical – that could be significantly alleviated. Innovative care models are too slow to take hold. Many programmes have demonstrated the value of multidisciplinary HF care to reduce costs and improve outcomes, but are often limited to a few centres of excellence. Encouragingly, the COVID-19 pandemic has increased the use of Telehealth, and these models require expansion

vii. Decision-makers must now acknowledge and address HF in all its dimensions. High-level strategies and plans should commit to deliver on clear goals to reduce avoidable hospitalisations and improve outcomes in HF. With this goal in mind, we propose five actions to which governments across Europe must now commit

8.2.4 IT systems maturity

Different countries are at different stages of developing IT systems that foster communication and collaboration between healthcare professionals, so the next steps vary significantly depending on the country. Integrated healthcare IT systems will be crucial to fully informed decision-making, helping to improve outcomes and reduce the burden of HF. Such systems will offer greater resilience and adaptability in the face of crises such as the COVID-19 pandemic. They can become the foundation for national HF registries.

COUNTRY	HEALTHCARE IT SYSTEMS	OTHER NOTABLE ASSESSMENT INITIATIVES
	The government has invested in IT hubs to support information exchange between care settings. The HF care team can share discharge information, consultation reports and laboratory test results, but sharing echocardiography footage and medication plans is difficult.	HF centre assessment initiative due to launch in 2021.
	IT systems allow for communication among hospitals but not between hospitals and primary care settings.	Publicly funded databases monitor healthcare delivery, clinical outcomes and societal factors. Data can be linked to HF registry for comprehensive analysis.
	The National Health Service has committed to improving IT systems to support multidisciplinary care, but HF-specific investment is lacking.	National pay-for-performance schemes monitor and incentivise optimal HF care in acute and community settings.
	IT systems differ between healthcare settings. Patients can delete information from electronic health records, which may affect the value of the system.	Multi-year study on acute and chronic HF and registry focused on acute HF (voluntary). National healthcare database collects wide range of data, including on HF.

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COUNTRY	HEALTHCARE IT SYSTEMS	OTHER NOTABLE ASSESSMENT INITIATIVES
	IT systems differ between healthcare settings, and medical information is often only accessible to different healthcare professionals when a direct referral is made between care settings.	HF quality indicators for primary care and other ambulatory settings (voluntary).
	Electronic health records are being implemented, but the IT system remains inadequate for communication between settings, which has been reported as a critical barrier to integrated HF care.	Regional assessment initiative collects data on HF management (voluntary).
	There is no standardised IT system in hospitals. The more advanced system in primary care allows for communication between professionals working in those settings.	Tools to assess HF care using the primary care IT system (voluntary).
	The IT system allows for data linkage and promotes communication, but there is a need to collect additional clinical parameters.	Different aspects of HF care monitored through various registries.
	There is no standardised or advanced IT system allowing for communication across care settings. Experts believe this is under development.	National DATA-HELP registry collects data on diagnosis and management of Heart failure with reduced ejection fraction.
	The IT system enables data-sharing, but additional features are needed to optimise communication between healthcare professionals.	National study recently initiated to measure HF prevalence.
	IT systems differ between healthcare settings and do not allow for communication across settings	Registries explore the burden of acute HF, the quality of care provided in HF units, and frailty in heart transplantation candidates.

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8.2.5 HF care specialized hospitals per million people (EU)

The last part of the analysis process involves defining the market sizing of possible payors (end-customers) , in the RETENTION case a proxy can be identified in the number of HF specialized hospitals per country. Priority will be given to those countries having the higher presence, also to optimize the communication strategies and the study of the possible business models to address the Hospitals and, in general the represented Healthcare systems.
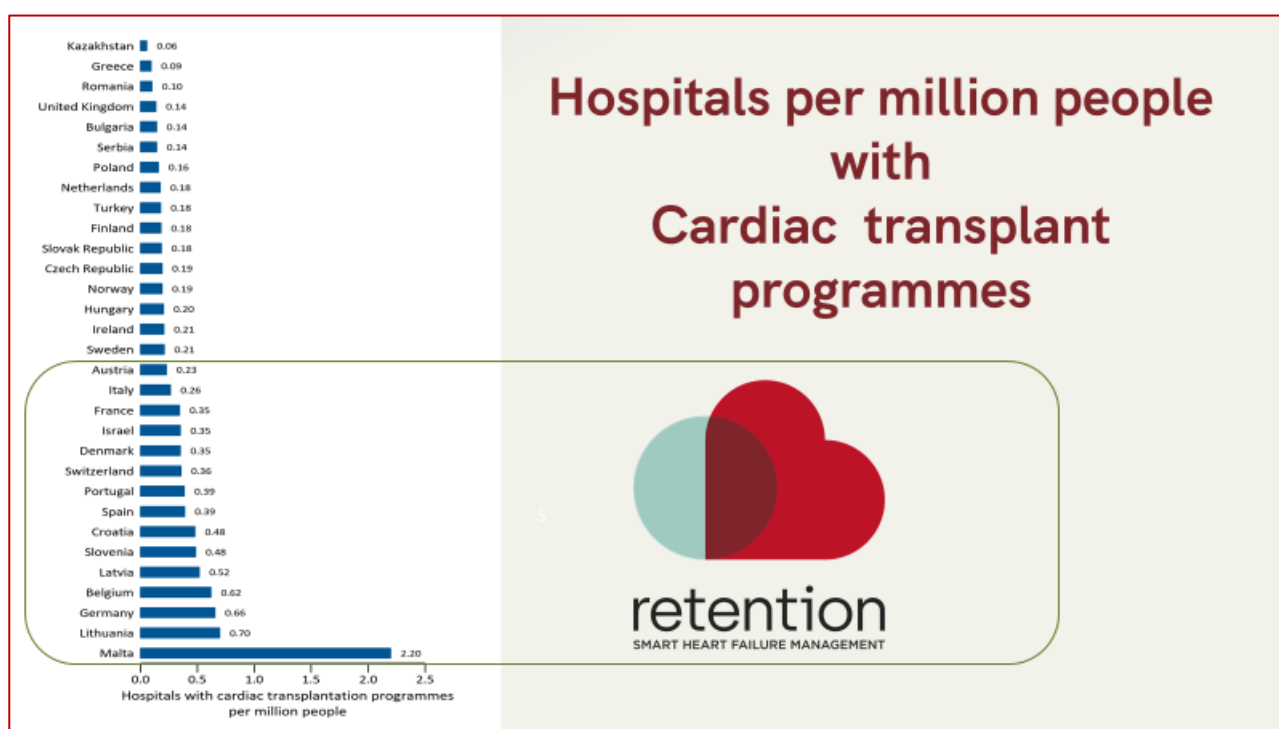
Figure 39: Hospitals per million people with cardiac transplant programmes in ESC member countries (2017 or latest available year) Data source: ESC Atlas of Cardiology, https://www.escardio.org/Research/ESC-Atlas-of-cardiology.

A successful go to market strategy addressing hospitals as proxy of the Healthcare system should account for the needs and goals of various stakeholders:

Clinicians: such as doctors and nurses are crucial to the success of any digital health solution. A key ally is often a department chief who can become the champion at the highest levels of decision making.

Business: it's important to understand the possible impact of RETENTION solution deployment on the bottom line. Can it increase efficiency in HF management and decrease cost? Will the hospital be incentivized to invest? What are the metrics that matter? These questions posed on specific project milestones (e.g. pilot assessment phase) will help understand the viability of the business model even if the clinical benefits are clear.

Operations: Hospital's services lines, facilities, and the supply chain are heavily focused on minimizing risk so that existing processes work as expected. Changes to such workflows can easily take a long time to roll out and *variance in outcomes* is what operations teams worry about. RETENTION should plan for this timeline and ensure that results and outcomes are consistently produced.

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Technology: Minimizing impact to IT and planning for concerns around security, deployment, and uptime are crucial to winning IT support. It is also important to understand where IT has invested before in HIS, EMR, Inventory management, communication, security infrastructure and other systems are often very expensive and take a lot of effort to deploy. One way to address this concern is to deep R&D and innovation activities towards the interoperability with existing systems.

8.3 Partnership

The ability to identify and work with partners external to the project consortium is a powerful source of competitive advantage, particularly when it comes to creating new growth products, solutions, and business models. Finding the right partner can help boosting the RETENTION innovation process and accelerate the market penetration.

To define the most useful partnership strategy there are several factors that need to be considered.

- The Link to the Business Value Proposition.

- Selection criteria.

- Partnership agreements.

The key partnerships' building block refers to the organisations that help or contribute to deliver the overall project value proposition. These organisations can supply needed infrastructure, services, materials, parts, products and so on.

In the RETENTION DoA, a list of candidate off-the-shelf devices, and organisations, required for integration into the RETENTION Edge instances have been already identified and will be explored along the project.

Selection criteria established in technical WPs will help to create a checklist in simple terms of the most important factors for selection, these are considered the *hard factors*. However, there are also *soft factors* relevant for the business value proposition optimisation such as the vision and values required to perform in collaborative research projects having a market perspective and evidence in the medium-long period (e.g. 3-5 years from the partnership establishment).

Within a sound partnership agreement, RETENTION consortium will have to agree to different factors that have operational, intellectual and financial implications.

8.4 Partners exploitation intentions on preliminary exploitable results

The following sections provide the preliminary individual exploitation plans envisaged by each project partner at the very beginning of the project. These considerations will constitute the starting point for the definition of the actual project exploitation strategy, guided by the exploitation and innovation methodologies above described, and will be periodically updated to reflect the project-related evolving internal and external scenario, with reference to contextual conditions, emerging opportunities and competitive landscape, and results as well as informal outcomes of the project itself.

8.4.1 ICCS

Organisational Background

The Institute of Communication and Computer Systems (ICCS) is a research organisation associated with the School of Electrical and Computer Engineering (SECE) of the National Technical University of Athens (NTUA). ICCS has been established in 1989 by the Ministry of Education with the scope to conduct research and development activity in the fields of all diverse aspects of telecommunication and computer systems and

techniques, and their implementation in a variety of application domains. Moreover, the Institute operates within the framework of the most prestigious higher education establishment of Greece, and therefore, the research and development activities that are conducted in ICCS are also reflected to the level of training and education offered by ICCS's staff members to the graduate and post-graduate students of SECE. Under this dual substance, ICCS focuses its efforts in advanced research allowing for (a) enhanced and up-to-date training and education experience offered to its students, (b) enhanced exploitation potentials of the high-tech products and services produced within the Institute, in the private and public sector and (c) enhanced potentials of attracting funding from national and international research programmes, initiatives and collaborations.

In RETENTION project, ICCS participates through the Biomedical Engineering Laboratory (BEL). BEL is a pioneer lab in the wider area of biomedical engineering in Greece, with research activities and interests covering many topics that are in the peak of up-to-date advanced biomedical research worldwide. The main activities of the laboratory cover sectors that are related to basic and applied research in specialised subjects of biomedical technology, such as Medical Data Management Systems, Bio-signal Processing and Medical Image Processing, Medical Informatics, Telemedicine and Home Care, Biosensors and Biometric technologies, etc. The laboratory focuses its efforts in the development of final products or system prototypes, as well as in the provision of high quality e-Health consultancy services to the health care sector.

BEL has gained significant experience in the implementation of Telemedicine and Home-Care systems and services, mainly through its participation in more than 40 relevant national and international projects in this area over the last 20 years. In the recent years, the research interests of the laboratory have expanded also in the area of Bioinformatics, Computational Modelling and Artificial Intelligence applying in healthcare and medicine. The research conducted by BEL in this domain involves the computational modelling of biological processes and the combined processing of multi-parametric patient data with artificial intelligence techniques in order to develop predictive models aiming to assist decision making in both disease diagnosis and treatment. Overall, these models aim to support clinicians in their decision-making process, allowing individual healthcare professionals but also healthcare systems in general, to optimise the health services they are offering, for the benefit of the patients, the society, as well as the national and European economy.

Being also part of a prestigious higher education establishment, BEL brings the theory and technology base into the project and provides the academic "weight" as well as the scientific background knowledge and experience which are needed, among others, to get creditability and acceptance of the RETENTION system in the academic community, within standards' organisations as well as in other public and industrial organisations.

In the above context, it is obvious that BEL has a strong interest in the RETENTION concept, the research and development work associated to building-up the system, and in the project outcomes and results, that will be assessed by the clinical team of the project in the framework of a trial study in the six participating clinical sites in Spain (2), Italy, Germany and Greece (2). BEL of ICCS is the coordinator of RETENTION project, further demonstrating the lab's strong involvement and interest in the project application domain addressed.

Results to be exploited

The vast majority of the Institute's financial resources come from its participation in national and international research and innovation projects and other research funding initiatives. It is obvious therefore, that the participation of ICCS in future RIA projects is of vital importance for the institute. The experience that will been gained from the intense research work that will be conducted in the lab in its fields of interest, is strengthening its position in the European research domain, and will be used extensively in the direction

of enhancing its funding opportunities. A significant part of the research work of the lab is directly associated to the application domain of RETENTION, and the lab will build on the experience to be gained from this project to further advance its scientific and technological excellence in the field. Risk assessment, classification and prediction models with the use of advanced, state of the art Machine Learning/Artificial Intelligence algorithms and computational modelling techniques is a hot research topic of the lab, with wide application potentials in many different medical cases. Clinical Decision Support Systems and services based on advanced intelligent data processing, become more and more important toward the achievement of Europe's strategic plan for personalised disease management and cost efficient provision of high quality health services to the citizens, as this is demonstrated by the relevant EU directives and funding initiatives launched. In this direction, RETENTION experience and achieved results will most certainly enhance ICCS's competitive advantages and funding opportunities in the immediate future.

There are two levels of project results that are exploitable by ICCS: (a) The RETENTION system prototype that will be produced, and (b) the RETENTION building experience that will be gained through its implementation.

The RETENTION individual Exploitation approach, that will be adapted throughout the project lifecycle, will attempt an in-depth investigation of the full spectrum of exploitation opportunities – not just product development. Exploitation is not the same as commercialisation and the exploitable results from European projects such as RETENTION may arise in many forms. Such exploitation opportunities could include:

- Transferring results and know-how into further EU projects

- Transferring results and know-how into national or industrial research projects

- Developing new services based on the prototypes, methods and tools

- Exploit the knowledge acquired throughout the project's lifetime in order to support the educational process at both graduate and post-graduate level through transfer of knowledge activities as well as exposing students to international scientific events where RETENTION will be presented

- Exploit the knowledge and the new technologies and products that are to emerge from RETENTION in order to possibly establish spin-off companies and be part of centres of excellence and participate as sponsors in incubator opportunities as start-up companies lack many resources, experience and networks and incubators provide services which helps them get through initial hurdles in starting up a business.

Another foreseeable result is to attract through RETENTION exposure a wider audience of new collaborators for continuation of research effort and through this, establish BEL of ICCS as a high value partner in the respective fields. The collaborations formed through successful projects might outlive the projects and migrate to a standard research core.

Target Audience

The target audience of the lab comprises of its students and collaborates. With students, the lab has an open channel of communication at a daily basis and in the classroom. There, the advanced technology and research performed by the lab is communicated to the students which respond with increased interest toward the labs' research activities as manifested by the large numbers of diploma theses, MSc theses and PhD dissertations that are conducted yearly in the lab, as well as the large number of scientific publications in peer-reviewed journals and conference proceedings. The lab invests on its students, part of whom will staff the relevant organisations that the lab is working with, after they graduate (such as health provision organisations, medical equipment and medical informatics companies, other research centres and university

labs, national committees for e-Health and Biomedical Technology, etc). Therefore, the students of the lab comprise a key group for the lab's future development.

The other collaborates of the lab come from different, complementary and interrelated fields and business domains, all of which contribute and shape the complex and sophisticated environment of "biomedical technology". In terms of organisation types (national, European and international), these include other Research Centres and University Laboratories, Health Providers, Clinics and Hospitals, the National Health System and the Ministry of Health and Welfare, Scientific Committees and Associations, the National Health Insurance Funds, smaller and bigger Enterprises doing business in the IT sector, Telecommunications' sector, Medical Devices' sector, Medical Informatics and Healthcare Applications' sector, etc. The lab has a long list of high-level collaborators that has built-up over time, through the research projects and other activities that the lab is carrying out continuously from its foundation to present and keeps contact with them, mostly in e-form but also at workshops, forums, conferences and other events of interest to all parties.

Exploitation Strategies

Following the analysis of the project's exploitable results in conjunction with the specific activities and interests of BEL/ICCS as provided in the previous sections, the exploitation strategy of the lab and the Institute can be summarised as follows:

- Exploitation of the scientific and technological excellence of the lab, for advanced education and training offered to the students, attracting their interest and advancing the research groups active in the lab, with young researchers doing graduate and post-graduate research theses, publications, etc.

- Exploitation of the scientific and technological excellence of the lab, to enhance funding opportunities from national, European and international research funding organisations and initiatives and from the participation of the lab in future research and innovation projects.

- Exploitation of the scientific and technological excellence of the lab, to enhance collaborations with other public organisations and industrial partners aiming to advance and progress the levels of research excellence and the further development of products and prototypes.

- Exploitation of the scientific and technological excellence of the lab, to enhance collaborations with national authorities and decision makers and provide them with consultation services.

BEL and ICCS will pursue an active exploitation at all levels described above, using the regular channels available to them in their academic everyday practice, through publications in journals and conferences, participation in workshops, conferences, symposia and thematic forums, through communication with competent staff in public and private organisations, scientific associations and committees etc.

8.4.2 OCSC

Organisational Background

Onassis Cardiac Surgery Center (O.C.S.C.), is a tertiary hospital, located in Athens, Greece and specializing in cardiovascular surgery and in diagnostic and interventional cardiology. It was designed, built, equipped and furnished by the "Alexander S. Onassis" Public Benefit Foundation (www.onassis.gr) and started operating in 1993. It operates under the supervision of the Greek Ministry of Health as a non-for-profit institution and deals with all types and severity medical problems of the heart. Its activities span from simple diagnostic test to the most sophisticated and complex heart operations, artificial heart implantation and heart transplantation. OCSC performs, on a yearly basis, about 2.100 open-heart operations (CABG, Valves,

Aneurysms, combined surgeries, redoes, etc), about 12-15 heart transplantations, about 10-15 VAD (artificial heart) implantations and about 5.500 heart catheterization procedures (angioplasty, STENTS, valvuloplasty, TAVI, interventional electrophysiology, defibrillators and pacemakers' implantations, etc), covering about 30%-50% of the Greek activities of this sector (100% in heart transplantations). Especially for heart transplantations, OCSC runs the only active transplantation program in Greece and is the only authorized hospital in which heart transplantations are taking place in the country. Recently, a special Lung Transplantation programme is initiated in OCSC, the only one in Greece. A special Paediatrics Dept. deals with co-genital heart problems of children (0-18 years old), both for cardiology and cardio-surgery. OCSC also specializes in heart failure (HF) from the very early stages up to heart assist devices implantation (artificial heart – Left/Right/Both Ventricular Assist Device/VAD), to heart transplantation and to the post-operative management of transplanted patients. In the 22 years of operation, OCSC has a very rich registry of patients of almost every type and variety of heart disease. Amongst them, particular interest, both in clinical and financial / social terms, has the group of patients with heart failure (HF), and especially the later stages of the disease (VAD implantation, heart transplantation), on which this proposal is focused. OCSC will act as one of the project's clinical trial sites, while at the same time, it will be acting as the clinical co-ordinator of RETENTION project, leading Task 1.2. OCSC will also lead WP7 and Task 7.3 by overviewing the execution of the clinical trials in the participating sites, based on the defined protocol. Moreover, in cooperation with the other hospitals of the project, will provide the medical knowledge (clinical know-how) required for the development of the patient's monitoring environment and service, as well as the selection of the proper data from the Hospital's Information Systems relevant to the specific group of patients. It will also define the group of patients of which the clinical data will be exploited to construct the proper prediction models, in close cooperation with National Technical University and the other computer science partners. Specialized doctors of OCSC will evaluate the results of the prediction models from the clinical point of view. Finally, it will provide feedback for the improvement of the models, as well as the development of protocols for the extension of data collection in the future, based on the remarks drawn from the patients monitoring and the predictive models used.

Results to be exploited

There are two levels of project results that will be exploitable by OCSC:

(a) Exploitation of clinical data, monitoring protocols and interventions remotely in patients with chronic conditions amalgamated with real world data obtained from external resources and real-world evidence

(b) Transferring the RETENTION phenotype and experience in the development of standardization of therapeutic algorithms, digital medicine and real-world evidence.

Target Audience

The target audience of OCSC comprises of its patients, health care providers (heart failure specialists, general practitioners), internees, medical students and key health policy stakeholders.

Our unique experience in treating advanced heart failure patients is well -communicated in Greece and Europe. Due to this experience and the unit's activities many young doctors apply for the specialties in cardiology and cardiac surgery and subspecialties in the field of advanced heart failure. We invest in our young doctors, part of whom will be our new staff.

Regarding the target audience of our patients, this consists of:

1) Advanced Heart Failure Patients

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2) Patient's that are supported with ventricular assist devices (VADs)-OCSC is a centre of excellence in applying new systems

3) Heart Transplanted patients

4) Patients for palliative care

5) Patients in the early stage of heart failure.

The Heart Failure Unit works in close collaboration with the Electrophysiological Department of the Hospital, implementing protocol for care for the patients with devices (CRTs, CARDIOMEMS).

OCSC is growing with the new National Transplant Centre which is a donation of the Onassis Health Foundation to the Greek State. Health policy stakeholders, LSE, National Organisation of Transplants, Ministry of Health and Onassis Health Foundation are involved in funded projects and initiatives regarding transplantation.

Exploitation Strategies

Having analysed the project's exploitable results previously, the exploitation strategy of our hospital can be summarised in the following points:

1) Exploitation of the clinical excellence of the Heart Failure, VAD and Transplant Unit of the OCSC in treating advanced heart failure patients (even in low organ donation environment) for specialisation and training for general cardiologists, heart failure specialists, cardiothoracic surgeons, scientific researchers, attracting their clinical and scientific interest and advancing the already established activities (postgraduate courses, workshops, scientific publications).

2) Exploitation of the clinical excellence of the Heart Failure, VAD and Transplant Unit of the OCSC to increase funds for further research and innovation projects from National, European and International Organisations Unfortunately, in the last few years no significant progress has been made in the field of the care of heart transplant recipients.

3) Exploitation of the clinical excellence of the Heart Failure, VAD and Transplant Unit of the OCSC, to amplify collaborations with other hospitals (National Heart Failure Network), organisations and industrial partners. In this direction, research excellence can be enhanced and further development of RETENTION phenotype.

4) Exploitation of the clinical excellence of the Heart Failure, VAD and Transplant Unit of the OCSC, to intensify collaborations with other hospitals and health policy makers providing them with consultation facilities.

The OCSC will pursue a multi-facetted plan intended to communicate and disseminate the project and its results, aiming to reach to and engage the healthcare community, as well as the broader research and expert communities and the general public.

Aiming at peers, scientific communities (heart and transplant societies), research communities, patients' societies, technological societies and care givers.

Through specific communication skills OCSC will also aim at non -specialists, addressing wider groups e.g. the general public, people working in the greater healthcare sector but who are not necessarily medical experts, National and European Authorities, municipalities, distribution chains, media & advertising.

Communication tools that will be used by OCSC to create awareness about the project's outputs are:

- The project website

- Electronic Newsletters -Press Releases

- Scientific Communities, Social Research Networks and Social Networks

- Presentation Material (brochures, posters, videos)

- Traditional Media

- Scientific Publications

- Workshops

- Interactive Networking

- Collaboration with Policy Makers

- EU-International Focused Events - -Academic Events

8.4.3 UNIBO

Organisational Background

UNIBO is the oldest university in the Western world, since it originates since 1088. Based in five campuses (Bologna, Cesena, Forlì, Ravenna, Rimini), with a branch in Buenos Aires, it offers over 200-degree programmes among its 32 Departments and 11 Schools to over 88,000 students and 3,000 teachers in 2019. 5,000 graduates are enrolled in PhDs and 3rd cycle programmes.

The University of Bologna is ranked 166th in the QS World University Rankings 2022. UNIBO is first in Italy, 19th in Europe and 71st worldwide as far as Academic Reputation is concerned. In 2020 it ranked 10 in the GreenMetric World University Rankings based on the five pillars including: Setting and Infrastructure, Energy and Climate Change, Waste, Water, Transportation, Education and Research.

The University of Bologna is deeply committed to the development of teaching excellence, cutting-edge research, local presence, international openness and information services.

As a comprehensive research university, Alma Mater invests in the multidisciplinary cross-cultural approach and in the inseparable connection between research and teaching. One of the most active universities leading and participating in European research and academic cooperation projects, Bologna has formed knowledge alliances with industry and public/private organizations. It is a hub of international networks. Research and Innovation are a priority of the University mission.

Regarding Innovation, UNIBO filed 86 new patent applications in 2017, of which 25 are new registrations, thereby giving rise to an active patent portfolio of over 370 patents related to more than 140 inventions.

With regard to the capability of attracting funding for research and innovation, UNIBO is very active both at National and European level in all the research areas. Activities related to competitive funding programs are supported by the Research and Third Mission Division, with more than 10 years' experience and about 50 people assisting the research groups.

UNIBO is the second Italian university for the attractiveness of European funding for research, 37st in the European ranking of institutions of higher education.

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In Horizon 2020, UNIBO is so far involved in 262 funded projects (69 as coordinator), with more than 105 M€ of funding.

In Emilia-Romagna, the Regional Law N° 29 of 2004 before and the DGR 86/2006 later, identify in the research a fundamental role within the Regional Health Service, as well as the welfare function and training activities, the development of which is essential to ensure innovation in all the main types of healthcare companies (USL companies, hospitals, hospital-university companies and Scientific Institute of medical Research - IRCCS). The recognition in IRCCS of the Sant'Orsola Polyclinic, with particular interest in the areas of care and research in transplants and in the critical patient and in the integrated medical and surgical management of oncology diseases that require and will require the increase of research results, also applied to the area of care.

Results to be exploited

The strategic exploitation plan shall promote multidisciplinary and international scientific development, in accordance with the sustainable development objectives of the UN Agenda 2030, engaging in the ethics and integrity of research, gender equality, public engagement, scientific education and above all in the open sciences, promoting the processes of cultural, socio-economic and technological innovation from the local to the international sphere, with the aim of increasing the quality of research. Internationalization is recognized by UNIBO as one of the pillars of the institutional strategy, it is of strong impact on all aspects of academic life, in the choices and actions underlying collaborations, agreements, partnerships, exchanges and mobility at all levels by investing their own funds and using those of national and international programs.

The activity is based on promotion, stimulation, development and monitoring of research results, supporting experts in:

- clinical-care management;
- divulgation and scientific production;
- the creation and maintenance of national and international relations;
- prevention programmes

ensuring:

- high-level scientific production;
- correct use of available resources;
- patient-centred approach;
- proper management of technological and human resources in order to define an integrated approach;
- privacy and patient safety.

Target Audience

The target audience includes physicians and health professionals who manage advanced heart failure and heart transplantation in their clinical practice, and the target population includes adult patients diagnosed.

Patients will also represent target audience by receiving specific training and information directed at improvement drug adherence and healthy lifestyle practices, as these will be derived from RETENTION results

Exploitation Strategies

Effective exploitation plan must be based on proper coordination of activities, in order to provide professionals with all the technical, scientific skills and operational tools.

In this context, it is necessary to support actions aimed at promoting, encouraging, developing and monitoring results in the field of biomedical and health research while maintaining an ethical approach for the protection and safety of patients. In particular:

- guaranteeing support to professionals in disseminating results and networking;

- supporting the professionals involved in research projects guaranteeing criteria of transparency, ethics, protection of privacy and above all patient safety;

- ensuring international collaboration to define a vision and therefore a common management of patients with similar characteristics;

- ensuring the correct and effective use of economic and technological resources, preparing contracts and economic agreements with medical and non-medical personnel, linked to the research project;

- ensuring the development and reorganization of patient management, supporting the technological aspect in order to integrate telemedicine into the current healthcare practice, promoting the use of wearable and non-wearable electronic devices to identify personal and environmental parameters that can influence the health of patients;

- enhancing technology transfer, identifying its limits and problems;

- supporting an active participation of patients / caregivers in the management of their condition.

8.4.4 UKESSEN

Organisational Background

The University Hospital Essen is a leading level 3 teaching hospital within the Ruhr-Area of Germany with approximately 6 million citizens. The West German Heart and Vascular Centre (WGHVC) with its departments of thoracic and cardiovascular surgery (Professor Arjang Ruhparwar) and cardiology (Professor Tienush Rassaf) offers the complete spectrum of cardiovascular medicine. There is a highly specialization in the field of heart failure (HF) treatment with several specific heart failure outpatient clinics already established to provide expert-in-the field professional care with more than 2000 patient visits per year. The close cooperation between cardiology and cardiothoracic surgery allows for state-of-the art treatment in cardiac care.

At the institution, more than 1700 cardiothoracic procedures are performed with more than 50 durable assist device implantations annually. All available methods of short-term devices to overcome immediate cardiac failure are available with more than 150 ECMO/ECLS services per year. Moreover, the WGHVC provides a continuously growing heart-transplant program.

Scientifically, the WGHVC itself accomplishes both, basic and clinical research and does share deep cooperation with basic research groups on and beyond the campus, nationally and internationally. Several national funding projects are up running.

With its focus on heart failure medicine and the broad spectrum of diagnosis and treatment, the RETENTION projects offer the great opportunity to collaborate with other partners within the European Union to enhance the treatment of heart failure patients.

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Results to be exploited

Within the many different cardiovascular problems that are pursued within the RETENTION project there certainly are questions that particularly are of clinical interest and may be addressed by the clinical partners.

At first, initial results might include results of the development and the content of app-based interfaces and the implementation of a wide spectrum of "internet-of-medical-things" compatible hardware into that RETENTION model. We see ourselves as partners in the development of this platform and we want to share our knowledge together with the IT specialist with community.

Once, the clinical part of the project has begun, intermediate results of the RETENTION strategy of an intensified ambulatory care in the setting of heart failure, especially focused on LVAD treatment, must be published in close collaboration with the other clinical partners of the project. We are convinced, that the final results of RETENTION have the potential to change the art of ambulatory care in heart failure medicine leading to further scientific interest to be addressed in the future.

Target Audience

Target audience of our group includes staff of our clinic (nurses, doctors, PAs, other professional HCP) and non-medical experts involved in the treatment of heart failure patients such as computer and software scientists. Disseminating the results (see exploitation strategies) using scientific contributions such as journal publication and abstracting, the target audience of medical experts in the field of HF will be addressed and found. Thus, the power of improvements by the RETENTION project might serve as role model in the care of HF patients in the future.

Exploitation Strategies

The concept and intermediate as well as final results will be presented at our centre and all affiliated partner hospitals within the RUHR-Heart failure network first. Scientific abstracts, presentations and journal contributions will follow nationally and internationally to distribute the information within the HF community. We will aim for workshops and we will take advantage of social media, including channels and platforms of our national and international societies.

8.4.5 SERMAS

Organisational Background

Servicio Madrileño de Salud (SERMAS) is the administrative and management structure that integrates every public hospital and other public health services of the Madrid Regional Health System. It is the legal representative (beneficiary) of the two public hospitals contributing to RECOGNITION and has delegated authority to the relevant Hospital Foundations which will handle the financial and administrative aspects of the Hospital's involvement in RETENTION. There are two hospitals participating in RETENTION under the same beneficiary:

• Hospital Universitario Ramón y Cajal (SERMAS-HURC)

The Hospital Universitario Ramón y Cajal is a 1,000-bed university hospital in Madrid founded in 1977, affiliated to Universidad de Alcalá de Henares and part of the Servicio Madrileño de Salud (SERMAS). It provides comprehensive health care in all medical and surgical specialities, and it includes an established research institute: Instituto Ramón y Cajal de Investigación Sanitaria, which encompasses basic, translational and clinical research departments. The institute has all the required infrastructures to perform phase I to IV clinical trials, including full laboratory and imaging equipment and an ethical committee. It ranks first in

Madrid and third in Spain in production of biomedical research, working in partnership with more than 50 international leading centres. SERMAS-HURC consists of 38 research groups that focus their activities on five

major areas: neurosciences; microbiology, immunology and infection; chronic diseases and cancer; epidemiology and health technology; cardio-metabolism and systems pathology. It also hosts many other independent researchers from the clinical area. All this critical mass generates +1000 publications and 200 new clinical trials per year. The knowledge created by all this activity has resulted in more than 80 innovation projects, and 25 patent families. SERMAS-HURC has a business development office, giving support to all projects from their very beginning, "from the idea to the market"; this office includes one innovation and technology transfer unit, certified by UNE 166002:2014, as well as one international projects unit.

• Hospital Universitario Puerta de Hierro (SERMAS-HUPHM)

It began its activities in 1964 and the main goals that underpin its creation are still present today: i) Clinical activities; ii) Research, Development, and Innovation; iii) Clinical training. The HUPHM has a useful surface of 165,000 m2, structured in 3 areas: i) Doctors' Offices; ii) Hospitalization Unit; iii) and Labs. Research Area. In this way, the Hospital also has: i) 613 beds, 62 outpatient care stations and 22 dialysis stations; ii) 21 operating rooms and 2 rooms for experimental surgery; and iii) 36 beds in the Emergency department. HUPHM supports the health needs of a population reckoned to provide for approximately 560.000 people. For the assisting of all this population, the Hospital has more than 2,700 persons for the clinical staff working in 46 clinical specialties. HUPHM is also a teaching hospital that belongs to the Faculty of Medicine of the Universidad Autónoma de Madrid and has established itself as an internationally known and highly competitive medical research centre. Its long tradition in Research and Innovation, and its significant number of researchers, has allowed to be considered by the Health Care Research Fund (the source of financial support from the Spanish Health Ministry) as a Mixed Research Unit (highest level), with a strong infrastructure, maintaining a broad range of R&D activities.

HUPHM is currently a reference in communication and information technologies, due to the fact of having the most modern Information Technology System. This System allows having all the processes integrated (management and care process) and access to clinical records now.

Finally, HUPHM is the core centre of a Health Research Institute, which is organized in five research areas: 1) Onco-Haematology; 2) Cardiovascular and digestive Biopathology; 3) Surgery research, Transplants and Health Technologies; 4) Neurosciences and Sense organs; and 5) Immunology and Genetic.

The Cardiology department of SERMAS-HURC, led by the PI Dr. Zamorano, is one of the main specialities in this hospital, with more than 45,000 annual cardiac visits. Dr. Zamorano is also the head of the Cardiovascular Diseases research group.

The cardiology department of SERMAS-HUPH, led by the PI Dr. Segovia, is well known by its leadership in advanced heart failure. Its heart transplant program is the first in Spain, with a total 950 procedures performed It is also the first centre in numbers of ventricular assist devices implanted in our country and maintains an active "Cardiogenic shock program" based in the use of short-term circulatory support devices. It takes care of more than 35 shock patients/year since 2014, with excellent results. This cardiology department also performs more than 26,000 annual outpatient cardiac visits.

Results to be exploited

SERMAS has a huge clinical experience in heart failure, heart transplantation and left ventricle assist devices. SERMAS is contributing with his expertise to design the RETENTION solution. In this direction, RETENTION experience and achieved results will most certainly enhance SERMAS's competitive advantages and funding

opportunities in the immediate future. There are two levels of project results that are exploitable by SERMAS: (a) The RETENTION system clinical trial that will be performed, and (b) the RETENTION clinical experience that will be gained through its implementation.

Target Audience

The target audience of SERMAS comprises its doctors, nurses and its informatics department but also other cardiologist and Hospitals in Spain and Europe. SERMAS has a prestigious scientific production and its impact on Heart Failure field in Europe is well-known. SERMAS will disseminate RETENTION results and RETENTION strategy in Europe demonstrating that it could be a powerful tool to change heart Failure patient's management.

Exploitation Strategies

The exploitation strategy of SERMAS can be summarised as follows:

- Exploitation of RETENTION solution in SERMAS hospitals. RETENTION system will be presented to SERMAS hospitals.
- Exploitation of RETENTION solution in Spain. RETENTION system will be disseminated among different cardiology departments in Spain at scientific meetings and through specific on-site sessions and workshops
- Explotation of RETENTION solution in Europe. RETENTION system will be disseminated among different cardiologists in Europe at European and international scientific meetings.

SERMAS will ensure an active exploitation through publications in journals and conferences, participation in workshops, symposia, etc.

8.4.6 NKUA

Organisational Background

The National and Kapodistrian University (NKUA) of Athens Medical School was established in 1837, is the oldest and largest medical school in Greece. Attikon University Hospital is the latest and largest NKUA-affiliated university hospital, covering a vast rural area in the capital's region and accepting referrals from all over the country. The heart failure unit is accepting referrals from all over the country and abroad and participates in local, national and international research projects.

Results to be exploited

NKUA has a huge clinical experience in the field of Heart Failure, both with clinical activities in the affiliated Attikon University Hospital-Heart Failure Unit and with its involvement in several related research projects. NKUA is contributing with his expertise in the RETENTION project, primarily in two main levels: (1) to design and finalize the clinical protocol of the RETENTION project, and (2) to participate in the execution of the clinical trial through patient recruitment and follow-up. Through this involvement, NKUA and the affiliated Attikon University Hospital-Heart Failure Unit will derive high level expertise in order to enhance its competitive advantages and funding opportunities in the future.

Target Audience

The target audience includes physicians and health professionals who manage heart failure in their clinical practice, while target population includes adult patients diagnosed with Heart Failure.

Patients also represent the target audience to receive specific training derived from the results of the RETENTION solution, aiming to improve their drug adherence, implement healthier lifestyle practices, recognize early and report to their physician any signs of approaching HF decompensation, with an ultimate aim to alleviate symptoms and improve mortality/morbidity.

Exploitation Strategies

Exploitation strategies of NKUA include actions aimed at promoting, developing and monitoring scientific advances in biomedical and health research while ensuring that all ethical standards are preserved for the protection and safety of patients.

In particular, the specific exploitation strategies of NKUA will include:

- Exploitation of RETENTION solution in all NKUA affiliated hospitals. RETENTION system will be presented to SERMAS hospitals.
- Exploitation of RETENTION solution in Greece. RETENTION system will be disseminated among different cardiology departments in Greece at local meetings and through specific on-site sessions.
- Participation in the exploitation of RETENTION solution internationally, through publications in peer-reviewed scientific journals, presentations in European and international scientific meetings, and participation in workshops and symposia.

8.4.7 FORTH

Organisational Background

The Foundation for Research and Technology Hellas (FORTH) is one of the largest research centres in Greece with well - organized facilities and highly qualified personnel. It was established in 1983 and over the years, FORTH has become one of the top European research centres, thanks to its high impact research results and its valuable socioeconomic contribution. The Institute of Molecular Biology and Biotechnology (IMBB) is based in Heraklion (Crete), and is conducting basic and applied research in established and emerging areas of Biomedical science. FORTH/IMBB-BR was founded in 1998, is the section of FORTH/IMBB focusing on biomedical research and is located in Ioannina, Greece.

In RETENTION project, FORTH participates through the Unit of Medical Technology & Intelligent Information

Systems (MedLab), as a technical partner. MedLab is a highly innovative and self-contained research unit strongly activated in the fields of Biomedical Engineering and development of Intelligent Information systems. It has an internationally acknowledged excellence in conducting high quality scientific research and developing innovative Information Technology (IT) applications, products and services. MedLab's research activities are based on international collaborations in the framework of European and Nationally funded projects (FP5, FP6, FP7, Horizon 2020). The Unit activities are classified into specific subjects such as Biomedical Research, Automated Diagnosis – Processing and analysis of Biomedical signals and images, Bioinformatics, Development of Wearable Devices, Decision Support Systems, Multi-scale Predictive modeling, Data mining and Big Data.

Based on the above, MedLab is strongly associated with the RETENTION concept, undertaking relevant tasks and working on the design and implementation of RETENTION Edge Gateway and Devices federation, the validation of the RETENTION solution from a technical/technological perspective, the definition of RETENTION data model, providing open data sharing specification and overviewing the gathering and analysis

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process of RETENTION requirements and the design of the initial architecture in collaboration with the clinical partners, in the context of the pilot study that will be conducted in six different clinical sites.

Results to be exploited

A part of the research work that is conducted in FORTH is directly associated to the application domain of RETENTION. Development of data model and decision-making for Personalised Management & Interventions along with the use of the most currently state of the art in Artificial intelligence and Machine learning algorithms and modelling techniques is a major research domain of the lab with a variety of biomedical applications including heart diseases. The knowledge and experience gained by FORTH from this project will be used for further advancement of its scientific and technological excellence in the field, providing high quality of services and enhancing the future funding opportunities.

FORTH will exploit the results from the project through the exploitation of the RETENTION system itself, but also through the knowledge and experience gained during the RETENTION implementation. Given the research orientation of FORTH, the exploitation approach that will be followed includes:

- Exploitation of the results and knowledge acquired for the project to develop new services and tools.
- Exploitation of the results and gained knowledge to European and international research projects in order to enhance research efforts.
- Exploitation of the results and gained knowledge to other national or industrial research projects.
- Exploitation of the knowledge to support the educational background of graduate and post-graduate students attracting their interest by their participation to national and international scientific events where RETENTION will be presented.

New research proposals are also expected capitalizing on the experience of the RETENTION and exploiting parts of this software platform for addressing new problems.

In addition, FORTH will examine its participation in any joint commercial exploitation schema arises from the RETENTION project.

Target Audience

The target audience of FORTH comprises the Academic community, Healthcare professionals and Data scientists.

Exploitation Strategies

The exploitation strategy that is in the framework of the interest of FORTH, based on the above-mentioned exploitable outcomes, is summarised as follows:

- Exploitation of the scientific and technological knowledge for the development of new technologies and services.
- Exploitation of the scientific and technological knowledge gained from RETENTION for participation in future research projects and further funding opportunities from national, European and international research organisations.
- Exploitation of the scientific and technological excellence in order to achieve collaborations with other organisations, national authorities and industrial partners for further deployment of products and enhancement of the research effort.

- Exploitation of the scientific and technological knowledge for educational and training purposes provided to students and researchers through scientific publications, conferences, theses etc.

8.4.8 LSE

Organisational Background

LSE is at the forefront of world-renowned social science research and is ranked as the top university for world-leading research by the UK Government. LSE Health brings together a core team of researchers, academics and decision makers and has a world reputation and presence in health systems, health policy, health economics & demography. It has an expanding global network of experts, scientists, decision-makers, senior members of competent authorities, including regulatory agencies, health insurance organisations and HTA bodies.

MTRG is a research unit within LSE Health concentrating on interdisciplinary and comparative policy research on medical technologies. The team produces high quality research and provides education, training, policy support and advice to key stakeholders, including the pharmaceutical industry, national governments, and international organisations. MTRG is led by Dr. Panos Kanavos who has been actively working in the field of the economics of pharmaceuticals and the pharmaceutical sector and has in-depth expertise of the field of regulatory pathways and HTA in Europe and oversees.

The unit conducts research in four main areas:

a) Economics of medical technologies, regulatory practices and impact of regulation;
b) Health Technology Assessment and funding mechanisms in developed, emerging and middle income countries;
c) Health system performance measurement and policy evaluation; and
d) Access determinants to medical technologies in developed, transition and emerging economies

MTRG has an international experience and its work spans developed, developing, emerging and lower and middle-income countries, with extensive projects undertaken across the EU, Latin America, Eastern Europe, the Gulf region and China, to name but a few geographic locations.

The team has been involved in various projects sponsored by public as well as private funders, studying regulatory requirements, pricing and reimbursement of innovative oncology medicines, and more specifically early regulatory approval and accelerated access schemes across the globe.

In the above context, reviewing current standard in clinical evidence and in health practices broadly is of strong interest to LSE. Therefore, engaging in the alignment of the RETENTION outputs to international standards is of key importance in the research portfolio of the team.

Results to be exploited

The main results to be exploited will come from two sources:

1. The review of the international standards in terms of E-Health, Real Word Data (RWD) and Real Word Evidence (RWE).
2. The actual standardization of the outputs of the project as a case study.

Overall, LSE expects the results to contribute to the advancement in the development of standardization of digital data and processes and real world evidence.

Target Audience

The target audience of the LSE team comprises the academic community and key health policy stakeholders.

In the academic arena, LSE has an open channel of communications through academic conferences, forums and journal publications. These are activities that constitute one of the core interests of the team.

The other target audience are health policy stakeholders. LSE team is currently involved in a large number of publicly and privately funded projects and initiatives with health organizations and it has a list of national and international on-going collaborations. Opportunities for cross-fertilization between projects will be explored during the project period and the health organizations involved in other academic activities would be a target audience for the RETENTION outputs.

Exploitation Strategies

Following the analysis of the current international standards in the field and the standardization of outputs, LSE is planning the following exploitation activities:

A. Written Dissemination:

- *Policy-relevant summaries of findings*, such as results of case studies, may be published in EuroHealth, or EuroObserver or Research Digest through LSE Health and similar outlets. These will target both technical and non-technical audiences.
- *Peer-review publications* in journals such as Health Policy, Health Economic reviews, Health Economics Policy and Law, the European Journal of Health Economics, Globalisation and Health or Health Economics, International Journal of Technology Assessment in Healthcare.
- *Other opportunities* will be taken as and when they arise, such as editorials in medical journals, articles in newspapers or other media, which will target the broader stakeholder community for communication and dissemination purposes.

B. Face to face Dissemination:

- *Conferences:* Results will be communicated at conferences and events that individuals attend, including some key international gatherings in the area of digital health and real-world evidence.
- *Seminars and workshops* with the identified standardisation bodies.

C. Website and Electronic Dissemination:

The RETENTION website will be used as a medium to further disseminate the project's outputs in terms of reports, publications and presentations. Other dissemination activities through different means of social media (twitter, LinkedIn) will also be carried out.

Overall, LSE will aim to exploit to the largest extent the outputs stemming from the standardization activities of RETENTION project.

8.4.9 STS

Organisational Background

SPHYNX Technology Solutions AG (SPHYNX) is based at Zug, Switzerland and has also offices in Cyprus. The company offers products and solutions, and consulting services, in the areas of cyber intelligence, analytics, incident response, assurance and certification. SPHYNX has developed a security and privacy assurance platform to enable customised and continuous assessment of the security and privacy of your enterprise and comprehensive risk management based on automated vulnerability analysis, threat analysis, penetration

testing, continuous monitoring and hybrid assessment models. Its platform incorporates also intrusion detection, fraud management, and incident response. SPHYNX offers customised services for enterprise security assurance. These enable its clients to set up security assessments, based on industrial and international standards (e.g., cloud, network, smart metering standards). The assessments are based and leverage on outcomes of the built-in analytic capabilities of the SPHYNX's security and privacy assurance platforms. The SPHYNX security and privacy assurance platform enables the configuration of security assessment, reporting and certification to the needs of different stakeholders ranging from senior management to external auditors and regulators. The consulting services offered by the company support its customers in setting up and security and privacy assurance program covering the specific needs for their enterprise, establish the connectivity required with their enterprise systems in order to obtain the evidence required for the different types of assessment, configure the reporting of the platform to customer needs, and train the personnel of its customers in overseeing the assurance program using the SPHYN's platform.

Results to be exploited

SPHYNX is particularly interested in the 3 types of solutions that RETENTION will develop and/or integrate. The first includes the solutions that will be developed and/or integrated to support IoT connectivity in the domain of smart digital care services. The second is the data ML analytics and decision marking solutions (including AI explainability modules, explainable and verifiable decision-making capabilities) that will be developed and/or integrated to offer personalised interventions for HF patients. The particular perspective of its interest in these two types of solutions is the development of assessment models and related event emission and control mechanisms that will be necessary for ensuring the end-to-end security of the solutions. SPHYNX's security assurance and certification platform that continually monitor, assess, and manage security and privacy threats, vulnerabilities, and risks of assets critical to ICT infrastructures, offers a comprehensive solution for cyber security assessment and management combining vulnerability assessments, penetration testing security orchestration, automation, and response to different stakeholders in the digital healthcare services provision chain, including for example healthcare service providers, public regulators and insurers, and offer consultancy and customisation services required for using it as a comprehensive framework for establishing and executing continuous security and privacy assurance programmes.

SPHYNX can also assist/support the maintenance as open research data (anomymised medical/usage, observational and experimental data, ML models and simulations, if Data Management Plan agrees to do so.

Exploitation Strategies

SPHYNX will use the outcomes of RETENTION for strengthening its service and product portfolio. Its plan is to augment the capabilities of its security assurance and certification platform in ways that allow it to support the delivery of precise and trustworthy digital healthcare services realised through wearables and medical devices, and backend cloud infrastructures. From a technical perspective, the strategy of SPHYNX for achieving this is to develop assurance models for continuous and hybrid assessment of the security and privacy of digital healthcare services, and appropriate event emission capabilities for the components (e.g., wearables, medical devices) that realise such services which could communicate to its security assurance and certification platform the information required for executing the necessary security and privacy monitoring/testing checks. From a business perspective, SPHYNX's strategy is to promote its security assurance and certification platform to different stakeholders in the digital healthcare services provision chain, including for example healthcare service providers, public regulators and insurers, and offer consultancy and customisation services required for using it as a comprehensive framework for establishing and executing continuous security and privacy assurance programmes.

8.4.10 DM

Organisational Background

DataMed SA is an Information Technology company, concentrated on the integration of modern, state-of-the-art electronic health solutions to its clientele. DataMed SA was founded in 1999 as the Healthcare IT specialist, with the vision to improve the quality of healthcare services provision, facilitate data access and contribute to more cost-effective use of available resources.

Our strategy incorporates delivering global, state-of-the-art e-Health solutions for hospitals,primary care physicians, clinics, patients, and the population, to new local or international markets, by bringing together our different leading partners to a superior network. Through our global network of partners (like IBM, Microsoft, ELADHealth, Better, OTE, Oracle, etc), we can offer state-of-the-art integrated Hospital Management Information Systems solutions, fully adjusted and customized to fulfil the special requirements of public and private hospitals in Greece and Cyprus.

Our solutions provide fully interoperable Clinical, Laboratory, Radiology Information Systems, combined with ERP and Hospital Analytics - Business Intelligence Systems, based onmodern technologies and workflow processes.

DataMed SA is a Market Leader in Greece & Cyprus, with 40% market share in Greece, as recipient of major Health IT projects for the Hellenic Ministry of Health (the region of Peloponnese, the region of Attica and other Major Hospitals), the Hellenic Ministry of Defence (all Military Hospitals), the Onassis Foundation, the Hellenic Electronic Health Record for all Greek population operated by IDIKA SA, and many others. Also, Datamed SA has 80% of the Cyprus market and is the exclusive Health IT provider for the Cyprus Healthcare System. DataMed SA has a presence in more than 60 public and private healthcare providers in Greece and Cyprus.

Datamed SA is an expert in the following areas:

- Hospital Management Information Systems (HIS, ERP, MIS – BI, RIS-PACS).
- Laboratory Information Systems (Haematology, Biomedical, Cytology, Microbiology, Immunology, Biobank, Genetics).
- Primary Care – Electronic Health Records (National Electronic Healthcare Record–IDIKA, National e-Appointment System, e-Prescription, Primary Care Physicians - all specialties, dentists, etc -, Patient Registries).
- Hematology Information Systems (Blood Donation Management and Blood product management system – BloodMed – Bloodbank, installed in Cyprus, Transplant Donation Management). Telemedicine and MHealth (Patient Engagement, Patient Access, Tele-monitoring & Home Care).
- Specialized Applications in Healthcare (Health App Development Platform, Fraud Detection systems, smart cards).
- Other Solutions, like Digitization of files, e-Government and e-learning in healthcare environments.

Research & Development in Datamed SA

Research & Development is one of the most crucial factors, that positions Datamed in the edge of technological, scientific, and social development. As a result of the company's investment in R&D, Datamed retains advanced technical and physical infrastructure, as well as invaluable human resources, with diverse training, experience, and scientific knowledge. Through its broad participation in Research and Development

projects, Datamed invests in new innovative technologies, to provide state-of-the-art Healthcare and IT solutions. R&D accounts to almost 40% of the total budget.

Through its broad participation in Research and Development projects, Datamed invests in new innovative technologies, to provide state-of-the-art Healthcare and IT solutions. From the first years of its founding, Datamed has implemented dozens of research projects, such as Topcare, Oresteia, Medisignal, Faethon, Meditrav, Vital Home, Ermis, C–Monitor, Remedies, Telemed, Digital Health and others.

Datamed collaborates closely with several scientific organizations and institutions, to promote innovation and joint implementation of research projects, to be at the cutting edge of technological and scientific developments and enhance its research and development work.

Datamed's research initiatives are important, as the research team of the company has implemented and presented a series of scientific publications in conferences and journals, regarding health policy and technology issues.

Results to be exploited

By planning and implementing the appropriate infrastructure of IT services in Hellenic NHS, Datamed participates in this proposal intending to satisfy the priorities of e-Health Network, as well as e-health recommendations where E.U. member states are called:

- To support Integrated Health Care.
- To demonstrate the importance of patient file data in creating evidence based health policies.
- To increase patient awareness of the importance of high quality data and to encourage their participation in the production and use of the data.

Datamed has also participated to the above, through projects developed an integrated environment of an innovative Electronic Health Record (EHR), by utilizing (collecting and analyzing) primary data, with embedded subsystems for the support of a clinical prediction / decision and therefore the doctors adopting a personalized therapy. The development of patient registries constitutes an important innovative characteristic of this proposal that Datamed can support. Furthermore, its technical knowledge also includes a subset of information maintained in the EHR, as well as embedded operations of secondary usage of registered data for research purposes and HTA (Health Technology Assessment) evaluation.

Thus, within the framework of the project, the following will be developed:

- EHR software, specialized in Heart Failure (HF) and possibly consequent Heart Transplantation (HT), and integrating all individual subsystems to support decision making (IoT devices, mobile applications, electronic patient follow-up questionnaires etc.).
- Basic Admission-Discharge-Transfer (ADT) patient registry subsystem (in a full inter-functionality with the EHR software), with built in AI, Big data and Decision support system for basic decision making (e.g. HTA), in the case of HF and HT, thus allowing the wide adoption of big data total spreading and better home care.

Patient Registries (PR) and EHR's are an organized system of data collection (clinical or other), to clearly evaluate defined outcomes, for a population determining a specific condition or disease. PR can provide unique information for the disease and patient population, in real conditions, which have not been studied neither imprinted in clinical trials. Hence, it offers measurable results, a real picture of the patient and the disease, as well as processing of personal data towards the production of information for a health system.

The integration of the model in the PR infrastructure with the analysis of historical and clinical data offers a research approach on this decision-making process.

The data-driven decision modelling methodology is suitable for clearly defined and structured decision-making processes in large volumes of data, where a human is not able to handle and control with his/her knowledge. For these reasons, decision making procedures are complex. Model-based decision methodologies provide a simplified representation of a situation that is understandable in a decision-making tool, so that this approach makes an on-qualified person, have easy access in the decision-making process.

The approach will be based on the exploitation of historical and clinical medical data, providing a new direction in the decision support, combining knowledge-based modelling methodology with data-based modelling methodology. All these referred can help strengthen the knowledge-based approach to be integrated. As the system will be able to data, into decision making, either for the clinician or the patients.

Target Audience

The main target users and potential customers of the project's results are, on the one hand the patient citizens themselves and on the other the healthcare providers, summarised in the following list:

Patients:

- Early Heart failure patient,
- Heart Failure Patient,
- Heart transplant Patient,
- Recovery Heart Patient.

The patients can be given (for a fee) the forementioned patient monitoring system.

Clinicians:

- Cardio-thoracic surgery doctors,
- Heart specialists,
- General practitioners interested in the health of the HF patients,
- other clinical stuff that are interested in the health of the patients,
- and any other doctor or clinical stuff that needs to have the information that the patient has a HF condition (for example the dentist).

The target audience of the company comprises of its customers (primary and secondary health system) and collaborates. With hospitals, among them OCSC, the company has an open channel of communication at a daily basis. There, the advanced technology and solutions performed by the company is communicated to the health professionals who respond with increased interest toward the company's activities and support. The company invests on its products, part of whom will staff the relevant organisations that the company is working with.

Exploitation Strategies

Following the analysis of the project's exploitable results in synthesis with the specific Datamed's activities, the basic exploitation strategy of the company can be grouped as follows:

Utilization of the scientific and technological know-how of the company, to support the integrated healthcare strategy of the national health system in the context of the announced upcoming strategy for health digitization.

Utilization of the company's scientific and technological know-how to enhance funding opportunities from national, European and international organizations and research funding initiatives and the company's participation in future research and innovative projects.

Utilization of the scientific and technological excellence of the company, to strengthen the collaborations with other public or private organizations and partners with the purpose of further developing innovative IT applications and upgrading the national e-health strategy.

Exploitation of the enhanced ability to apply evidence-based health care policies through vertical electronic patients' files and other IT applications, for government or the private health sector.

Exploitation of the scientific and technological know-how of Datamed, to provide info to clinicians through collecting real time patient data to help them increase primary health efficiency and vice versa to increase patient awareness of the importance of high-quality data and to encourage their participation in the production and use of such data.

Possible integration of the system produced, to Datamed's existing product line, or creating a new product line for Heart Failure.

Exploitation of the company's scientific and technological know-how to drive optimization of the support of the clinical decision-making process concerning personalized therapy and the maximization of the produced health result.

8.4.11 i2G

Organisational Background

Innovation to Grow is an innovative SME active in the area of innovation management and digital transformation, supporting customers in developing business models, technology enabled marketing plans

and communication strategies for products, services and business relevant experiences.

By applying a decade of experience in innovation management, i2Grow helps defining product strategies that maximize the benefits for the end users in both B2C and B2B value proposition type of offer. Based in Milano, since 2009 it supports customers in ideate, innovate, implement and communicate Digital Research projects.

The professional team's expertise ranges from business process analysis and innovation, cultural and business trends, end-users and stakeholders' insights, business model innovation, digital-process-compliant software development, tech-marketing as well as public and private investment and funding opportunities suitable to the specific stage of project idea evolution.

The company has developed its own service methodology to help customers moving an idea to market through design, testing, development, and commercialization. The method starts from the project idea management, partnering with the customer to help make it a reality, involving and managing multi-disciplinary teams and finally ensuring the overall experience, product or solution is designed to satisfy the

need of end users and stakeholders involved through a coordinated off-line and on-line engagement strategy.

Results to be exploited

In the RETENTION framework, i2G will cover the role of the Innovation Manager. As such, it will guide the process for project's innovation management and IPR handling while ensuring that internal as well as external opportunities for innovation are subject to regular reviews. The methodology that will be implemented for the project's innovations identification (i.e. platform, application and intervention, system and services), the

innovations collection process to be integrated in the overall project results and handling of the appropriate tools for know how protection, are the main assets i2G aims to exploit even beyond the project's boundaries thanks to replicability.

Target Audience

The company will reply to its network of customers, companies and startups, to help them moving research outcomes to enter the market.

Exploitation Strategies

i2G Innovation Management process supported by digital technologies will allow to create a bridge among the R&D activities and the potential market possibilities and keeping the technology roadmap always aligned with the digital market evolution. A collaboration tool will be provided, managed and used in focus groups lead by i2G in order to facilitate the innovation methodology implementation, social and business impact assessment and co-design of the most suitable exploitation and commercialisation opportunities.

8.4.12 AEGIS

Organisational Background

AEGIS IT RESEARCH GmbH (https://aegisresearch.eu/) is a research and development company (SME) based in Germany developing and managing innovative IT solutions for numerous business sectors. It is based on a highly effective professional team consisting of talented researchers and top-class IT experts from all over the world. This team empowers the company with a strong, diverse skill set which helps AEGIS offer innovative products and high-tech business solutions to the market.

There are three areas where AEGIS expertise and software products have been proven, namely: (i) advanced, intuitive and informative mechanisms and interactive visualizations for exploratory data analysis and Big Data analytics; (ii) advanced visualizations and consulting services related to cybersecurity and (iii) digital forensic investigation and analysis (both physical and cyber).

AEGIS has designed and implemented the AEGIS Advanced Visualization Toolkit (AVT) that is an extensible software (TRL 4 with a wide application scope, ranging from Visualization Dashboards of multimodal data sources to Big Data analytics (Big Data offerings as a Service for IT and not-IT users) and Digital Forensic Analysis (Forensics Visualization Toolkit).

Results to be exploited

By participating in the RETENTION project, AEGIS will enhance its AVT for the development of dedicated user interfaces of CBS instances and GIC dashboards and visualizations. AEGIS aims at making another step towards the development of the aforementioned service, focusing on RETENTION's domain of healthcare and clinical/patients' interventions. AEGIS envisions a strong collaboration with partners offering commercially established visualization solutions or cutting-edge research results on data analytics not only during the official duration of the project but even afterward, ensuring the long-term sustainability of the service and its potential commercialization.

Target Audience

Primary groups of users that AEGIS's solution will target include healthcare institutions and the business communities that are interested in providing innovative products and high-quality solutions to their beneficiaries. Members of these groups are involved in RETENTION and therefore appear as major candidates

to use AEGIS services which, built based on their needs and requirements, will have a significant advantage with respect to other possible solutions. Secondary targeted groups consist of entities that own and/or manage and/or process Big Data and Academic/Research Institutes dealing with research on Big Data technologies.

Exploitation Strategies

A strategic goal of AEGIS is to extend its know-how in diverse domains and test its solutions in real-life environments so as to penetrate the market with tested, robust, and user-validated products. AEGIS will attempt at combining its efforts in dissemination activities with the overall exploitation strategy. For AEGIS, the strategic exploitation and development plan is summarised as follows:

The AEGIS Advanced Visualisation Toolkit provides us with an extensible platform for data visualization and transformation. We believe that the emerging market for personalized clinical monitoring and interventions will, by necessity, depend heavily on novel visualization techniques such as those provided by our visualization toolkit.

The RETENTION project will help AEGIS refine and target its visualization products to companies and organizations that manipulate IoT, IoMT, and big data in general. Our strategy is to consult with our RETENTION partners to fully understand their potential issues with existing visualization products and use their experience to create a better, more efficient, and highly targeted product for the emerging ICT market in the healthcare domain.

AEGIS will kick-off the process of commercialization of its Advanced Visualisation Toolkit after the first release of the integrated RETENTION platform. Based on the integration and testing results, a build-measure-learn feedback loop will start with end-users which will allow the AEGIS team to collect the maximum amount of validated learning about business requirements (validation). The goal will be to test fundamental business hypotheses (or leap-of-faith assumptions) and to help AEGIS begin the commercialization process (pricing policy, costs, etc.) as soon as possible.

8.4.13 SIESLR

Organisational Background

SIEMENS is a global leader in electric and electronic industry, in complex infrastructures solutions, an active provider of sustainable green technologies or performant healthcare. Siemens Technology (T) develop hardware and software systems and solutions, and a broad range of services for the entire field of information and communication technologies, acting as main driver of innovation inside Siemens. Current research capacity and expertise of the department encompasses, among others, fields like Constraint Based Configurations and Schedulers, Complex Event Processing, Medical Informatics, Intelligent Networks, Sensor Networks, Data Acquisition Architectures, and modern software systems. The department acts at the global scale in Siemens Technology division, core technological house of the corporation. Due to this unique position, the group contributes in the large mesh of knowledge of T experts, with large access to the EU funded projects to which Siemens T already contributes. From the local group perspective, the expertise offered is centered around some main research cores: Knowledge based systems (with a strong focus on Constraints Based Systems and the mix with Semantic technologies), Event Processing and Event Driven Architectures, Multi-Agent Systems, Big Data analytics, Cloud Computing and Networking technologies, industry grade MLOps, Intelligent Energy Grid Management or Cities Infrastructures.

Results to be exploited

Siemens drive the definition of RETENTION data analytics and ML platform architecture and derived interoperability layer and is a major contributor on associated applications.

Siemens is set to assist in the definition of the acceptance criteria of trials driving the associated efforts and validation efforts.

ASsoutcomes of technical work packages where Siemens assist with the definition of the model process describing the access conditions to specific data objects associated to specialized protocols, leveraging federated ML infrastructures.

A significant effort will be dedicated to the to the adaptation of target framework to an own analytics pipeline serving as backbone for Secure Data Fusion middleware employed in various diagnostics processes not only for healthcare use cases but also in smart cities research efforts where high frequency data is expected – it includes both implementation and the deployment, operation, and support of the pilot for internal customers.

Target Audience

SIESLR team looks at the problem from few various perspectives, given by the way how project vision is implemented. Addressed audience is structured on few large families of experts:

- Data analytics and AI experts – due to the nature of Technology department, sharing knowledge inside the company is one of key tools to generate interest and use. Taking into accounts the volume of about 2000 DA&AI professionals within Siemens RETENTION results will be promoted in business projects with large impact, not only on healthcare area, but also in Smart Buildings or IOT enabled automation.
- Healthcare systems professionals – results of RETENTION will reach product designers who plan and deliver specific solutions with a strong focus on heart specific diagnostic support.
- System designers – RETENTION have the chance to validate innovating system models where value of the data is used intensively. SIESLR plan to use this experience to enrich own pathways for digital transformation of systems delivered

Exploitation Strategies

Looking at technologies last reviews we may observe an explosion of interest regarding the volume of wearable, mobile and embedded things connected to the internet. Using "commodity" sensing, a plethora of potential applications ranging from environmental monitoring, industrial logistic up to personalized healthcare become possible and available. The data processed by such applications is usually acquired and transmitted towards cloud premises, where the actual processing of it also takes place. Furthermore, making use of the existing data, cloud analytics may realize high value services leading to better use of resources, data and cross-fertilization between domain expertise owners.

SIESLR will provide to key internal partners area project outcomes and insights gained during project execution. Broad public initiatives where Siemens is strategic partner will receive consultation regarding DA&AI of multimodal data and associated analytics for public and business use.

Key results will be considered to be transferred also to products and services where Siemens is worldwide leader. Not only healthcare but also other businesses like large scale manufacturing are highly promising areas where distributed IoT and cloud computing evaluation and interactions platforms are expected to deliver added value on a flexible and safe manner.

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8.4.14 EUNL

Organisational Background

EUNOMIA Ltd is a consultancy firm, located in Cork (Ireland), specialised in the provision of business and legal consultancy services information technology (IT), including, privacy & data protection. EUNOMIA's services include legal compliance consultancy on data protection, guidance by technology experts on how privacy by-design can be adopted into ICT systems, analysis of issues pertaining to research ethics and of ethical considerations that accompany the advancement and use of said technologies, as well as research on and application of appropriate assessment procedures and mitigation strategies to ensure the implementation and monitoring of competent regulatory frameworks at International, EU and national level. In order to ensure that the offered provisions are up-to-date, effective and adequate, EUNOMIA follows a multidisciplinary approach that is based on legal, business, and technical analysis of the systems, processes and data held by organisations.

EUNOMIA team is composed of experts with an international background and professional experience gained both in academia and in the private sector, maintaining an extensive network in the ICT domain. EUNOMIA experts are in the position to support an organization in such a situation in understanding problems and technical faults more accurately, utilising data-based decision making in an appropriate manner and to provide guidance for managing data and privacy risks effectively and cost efficiently. EUNOMIA -and EUNOMIA team members- have a growth mindset, making conscious efforts towards deepening the knowledge in the field of law and ethics, aiming to amplify the understanding of the associated legal challenges raised by ICT developments, such as AI and 5G networks. Furthermore, EUNOMIA acknowledges the particular traits of each stakeholder (e.g. SME, large corporations) and customizes the provisioning of its services accordingly, aiming to keep the quality of its services consistently high.

Results to be exploited

In the context of the RETENTION project, EUNOMIA aspires to analyze and oversee compliance with the ethical requirements and legal obligations pertaining to the envisioned research activities, relating both to the management of personal data and the conduction of clinical trials. The identified exploitable results regarding EUNOMIA's contribution to the project derive from the in-depth analysis and interpretation of the applicable ethical and legal framework and the advancement of methods and tools for evidence-based monitoring of compliance. Additionally, the acquisition of new knowledge and experience through extensive research and active participation on the discussions of currently significant topics in the field of ethics and privacy relating to data-driven emerging technologies in the healthcare sector, as well as the eventual establishment of collaborations and the engagement with a variety of interested stakeholders are also considered to be anticipated valuable assets.

Analyzing and demonstrating by-design compliance with privacy and ethics requirements constitutes an essential part of the endeavours to advance innovative eHealth technologies. It also brings added value and maximizes the relevant projects' impact. Data-centred products that deploy cutting-edge techniques for analyzing input (such as big data analytics, artificial intelligence, and machine learning) are fraught with ethical, societal, and regulatory concerns. Participation in RETENTION provides a valuable opportunity to stimulate development and application of tools in support of the efforts to develop trustworthy and human-centered technological solutions in the healthcare sector, as well as to engage with current discussions at academic and policy-making level.

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The RETENTION outcomes are of important commercial value to EUNOMIA. Since the digital transition is significantly accelerated in the past few years, especially regarding the advancements on biomedical technology, experienced expert advice and development of new services and solutions for identifying and addressing ethics and privacy considerations in innovative research and product-development provide to interested research companies, institutions, and enterprises with a significant competitive advantage. Through the overall dissemination, communication and exploitation activities of RETENTION, EUNOMIA may gain recognition in the respective field of the market.

Target Audience
Given the range of possibilities for exploitation of the RETENTION outcomes concerning EUNOMIA, the initial identification of interested stakeholders may include the following categories:

- Private sector stakeholders and industry
- Academia and researchers
- Institutions involved in policymaking
- Related EU-funded projects

Exploitation Strategies
The exploitation activities will be carried out throughout the full duration of the project, starting with a preliminary identification of both the exploitable assets and of the potential target audience. In close connection with the project's communication and dissemination activities, all exploitation opportunities shall be pursued through EUNOMIA's communication channels and activities (i.e., publications and participation to conferences).

The experience, knowledge and any development of services that may occur shall be exploited both from a business perspective and a societal perspective. Activities oriented towards raising awareness on relevant ethics and privacy issues play an important role in the exploitation strategy. These involve showing how effective addressment of such issues may benefit the market uptake of the proposed solutions and services offered by EUNOMIA. Exploitation activities shall also be oriented towards enhancing collaboration with all interested stakeholders and exchanging feedback on the issues under consideration.
The exploitation strategy will be updated as the RETENTION project progresses, in order to integrate the produced outcomes. Given the range of the identified target audience, it is, finally, important to note that the RETENTION results must be translated and customized to specific needs and interests of each group of the targeted audience.

9 Standardisation Plan

To ensure the applicability to real practice of the findings generated throughout the RETENTION project aligning with recognised international standards is a crucial aspect. Therefore, effective dissemination, communication, and exploitation of the results to standardisation bodies and initiatives as well as the reviews of standardisation guidelines is an essential step to undertake in the RETENTION project. Aligning the outcomes generated through this research to the current standard in the sector of eHealth, Real Word Data (RWD) and Real Word Evidence (RWE) will enhance the impact and improve the value of the project overall. The RETENTION Consortium, led by the LSE team, has developed a standardisation plan that includes a review of international standards relevant to the RETENTION project and a continuous engagement action with identified standardisation bodies.

9.1   Methods

A mixed-methods approach has been foreseen for the standardisation plan with an initial review of the international standard currently adopted by health regulators and actors, combined with surveys, experts' workshops, and teleconference and email consultations. Therefore, the standardisation plan will be divided in three phases:

- **Phase 1** comprises the identification and analysis of international standard for eHealth, RWE and RWD across OECD countries. A targeted review of peer-review, grey literature and official standardisation bodies and initiatives websites will be conducted to identify key standards in methods and processes.
- **Phase 2** comprises the comparison of these practices accepted internationally with the ones used to develop outputs throughout the RETENTION projects and the alignment of the latter to international recognised standards. When data from partners will become available, the LSE team will critically review the processes used and standards followed to ensure that they align with current international standards. If areas of improvement are identified, main elements to apply to enhance the robustness and the standardisation of the RETENTION results will be outlined. Overall, in this phase, LSE will ensure that the proper standardisation processes are followed, and reliable and validated data are produced.
- **Phase 3** comprises the engagement of standardisation bodies, key stakeholders, and advocacy groups to validate the results. This would involve three sub-phases: **preparation, active dissemination and improvement of outputs**:

  Preparation phase: the LSE team will produce all the relevant materials to present across different dissemination activities such as presentations for workshop sessions, pre-reading materials for workshop activities and Delphi panels, case studies and summaries of research.

  Active dissemination phase: LSE will seek the involvement and expert opinion of key standardisation bodies and key stakeholders. Thus, face-to-face communication and dissemination activities will be conducted to inform the health policymakers and standardisation bodies about the project and potentially receive feedback from a broad range of stakeholders. Consultations, workshops, and conferences will all be effective tools to communicate and disseminate findings, and to validate the methodologies applied within the project.

  Improvement of outputs: the feedback received throughout the active dissemination phase will be incorporated and the standardisation of the project's outputs finalised.

9.2   Standardisation bodies/projects

RETENTION will contact and engage a number of standardisation bodies and initiatives and will review published standardisation guidelines. Two macro categories of international standards to target, namely, the standards in eHealth and the standards in RWD and RWE have been already identified as relevant for the project's activities. The bodies/initiatives that will be considered are listed below according to their specific focus. The list is a tentative one and it may change as further bodies are identified and as the feasibility of the deliverable further necessitates.

eHealth standards	
The eHealth Standardization Coordination Group (eHSCG)	https://www.itu.int/en/ITU-T/studygroups/com16/ehscg/Pages/default.aspx
The ISO/TC 215 Technical Committee	https://www.iso.org/committee/54960.html
ETSI standards on eHealth	https://www.etsi.org/technologies/ehealth
ETSI Cyber Security Technical Committee (TC CYBER)	https://www.etsi.org/committee/cyber
Working groups of the ISO/IEC JTC 1/SC 27 [155] IT Security Techniques committee)	https://www.iso.org/committee/45306.html
The European Committee for Standardization (CEN) - Healthcare and Health and Safety business sector	https://www.cen.eu/work/Sectors/Healthcare/Pages/default.aspx
The European Committee for Electrotechnical Standardization (CENELEC) - Healthcare and Health and Safety business sector	https://www.cenelec.eu/
The European Telecommunications Standards Institute (ETSI) - Healthcare and Health and Safety business sector	https://www.etsi.org/
European Commission initiative – Digital EU (The European Electronic Health record exchange	https://digital-strategy.ec.europa.eu/en/policies/electronic-health-records
RWE and RWD standards	
Clinical Data Interchange Standards Consortium (CDISC)	https://www.cdisc.org/
HMA-EMA joint Big Data Task Force informing EU strategy to 2025 to seize the opportunity for data-driven, evidence-based, robust decision making.	https://www.ema.europa.eu/en/about-us/how-we-work/big-data
Observational Health data Sciences and Informatics (OHDSI)	https://ohdsi.org/
US. Food & Drug Administration (FDA). Real-World Evidence Standard	https://www.fda.gov/science-research/science-and-research-special-topics/real-world-evidence

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TRUST4RD initiative	https://fipra.com/case-study/trust4rd-tool-for-reducing-uncertainties-in-the-evidence-generation-for-specialised-treatments-for-rare-diseases/
RWE4Decisions	https://rwe4decisions.com/
OPTIMAL framework	https://www.mdpi.com/2079-9292/10/3/221
EUnetHTA REQueST	https://www.eunethta.eu/request-tool-and-its-vision-paper/
EUnetHTA Post-Licensing Evidence Generation pilots	https://www.eunethta.eu/pleg/
ICER—RWE for Coverage Decisions: Opportunities and Challenges	https://icer.org/news-insights/press-releases/icer-and-aetion-rwe/
NICE Decision Support Unit—RWD for estimation of treatment effects	http://nicedsu.org.uk/methods-development/real-world-data/
European Reference Networks—development of disease registries for rare diseases	https://webgate.ec.europa.eu/ern/
#DataSavesLives	https://datasaveslives.eu/
Office of Health Economics Legal barriers to better use of health data to deliver pharmaceutical innovation.	https://www.ohe.org/publications/legal-barriers-better-use-health-data-deliver-pharmaceutical-innovation

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10 Conclusions

The deliverable D9.2 is developed in the frame of WP9 and takes into consideration the complexity and breadth of activities of Impact creation, Dissemination, Communication, Stakeholder Engagement, Exploitation and Standardisation that the RETENTION project will put in place across its work packages.

It provides an overview of the plans, objectives, methods and tools to be implemented and a handy guideline to secure smooth interaction between the WP9 core team and the rest of partners.

Annex 1 - RETENTION Logo & identity basic guidelines

retention

SMART HEART FAILURE MANAGEMENT

Logo & identity basic guidelines

The content of this brief manual provides the basic tools and guidelines to ensure the correct use of Retention's visual identity elements: logo, typeface and colour palette.
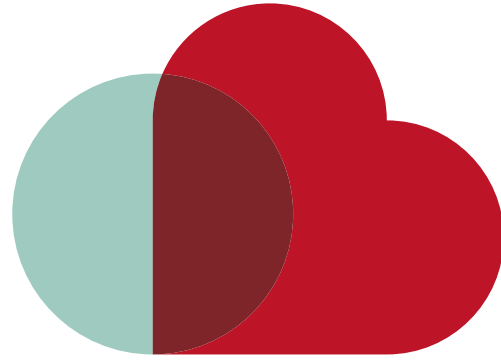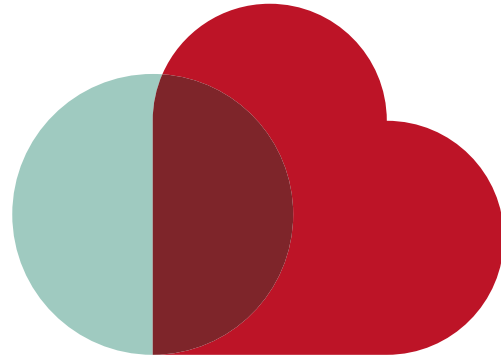
References for the logo design.
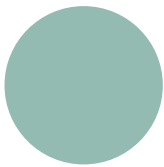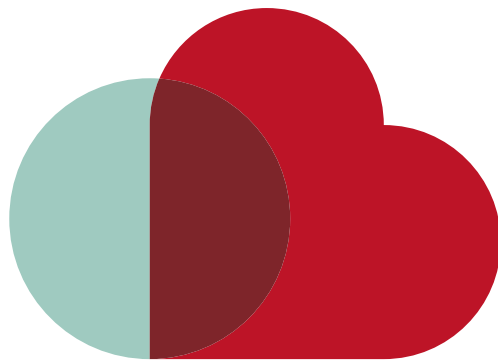
world   heart cloud Grayscale version of the logo.
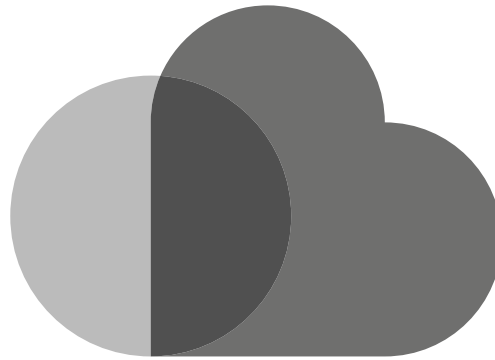
Monochrome version of the logo.

retention

Black version of the logo.
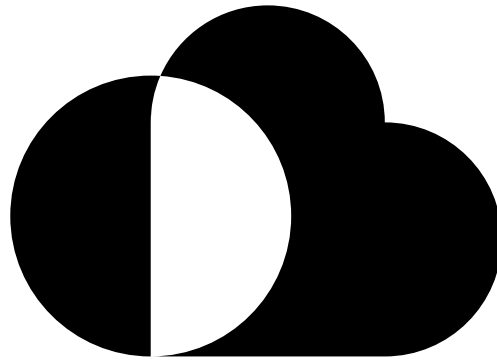
retention

White version of the logo.
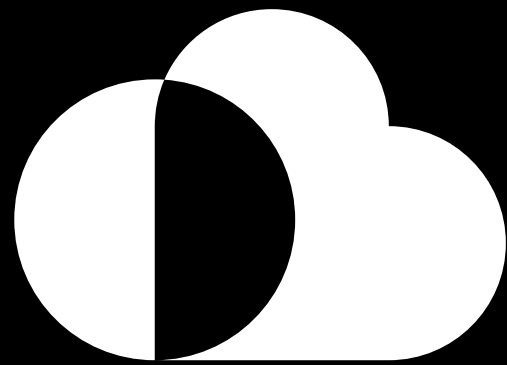
retention

Clear space.

When the Retention logo is used with other logos or other elements, a clear space should be maintained to ensure integrity, legibility and visibility. No other element should fall within this area. Use the height of two letters 't' of the Retention wordmark as a measuring tool to help maintain clearance.
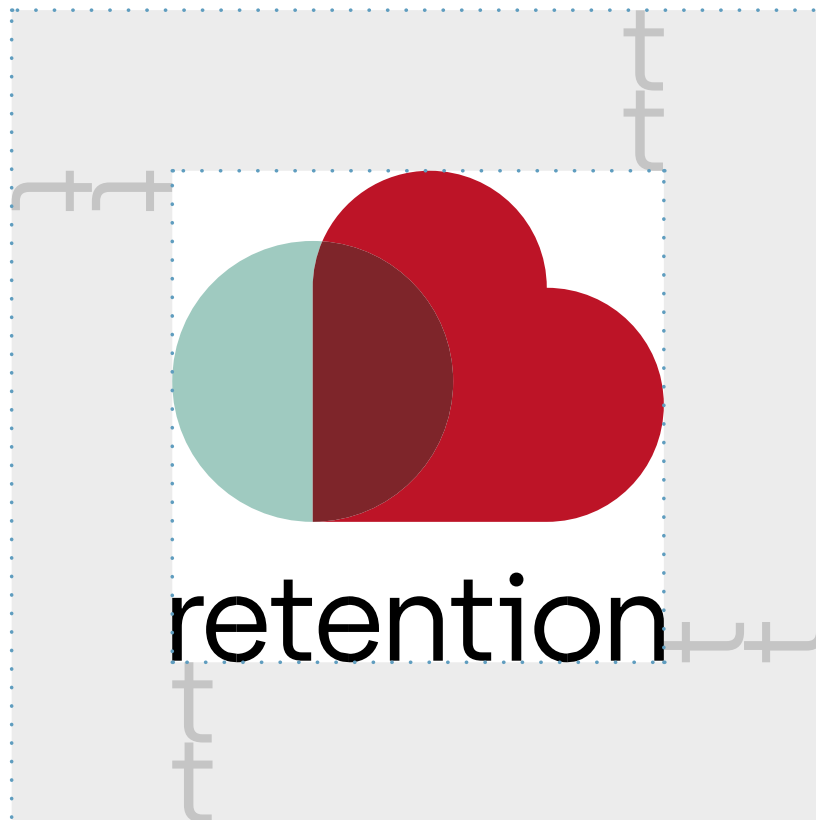
Minimum size.

The minimum size allowed for the use of the logo is 25mm base for the payoff version and 15mm for the non-payoff version.

10 mm

25 mm
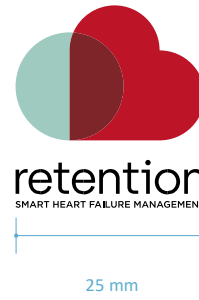
Typography.

For all paper or digital documentation, the use of the Open Source sans serif typeface *HK Grotesk* is suggested.

This typeface has a very large family, with a large number of different weights in both the roman and italic versions.

HK grotesk

Aa

https://hanken.co/products/hk-grotesk

https://fontsquirrel.com/fonts/hk-grotesk

ABCČĆDĐEFGHIJKLMNOPQRSŠTUVWXYZŽ

AbcčćdđefghijklmnopqrsštuvwxyzŽ

1234567890'?!%#@&*ˆ¨˝".   LIGHT

ABCČĆDĐEFGHIJKLMNOPQRSŠTUVWXYZŽ

abcččćdđefghijklmnopqrsštuvwxyzž 1234567890'?!%#@&*ˆ¨˝".

REG

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M

ABCČĆDĐEFGHIJKLMNOPQRSŠTUVWXYZŽ

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SEM

ABCČĆDĐEFGHIJKLMNOPQRSŠTUVWXYZŽ

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abcččćdđefghijklmnopqrsštuvwxyzž 1234567890'?!%#@&*ˆ¨˝".

EXTRA

Color palette.

CMYK 50/0/30/0

RGB 159/202/192

HEX #9FCAC0

CMYK 40/100/90/15

RGB 126/37/42

HEX #7E252A

CMYK 5/100/90/0
RGB 189/20/39

HEX #BD1427
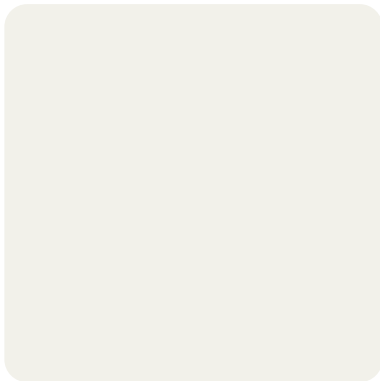
CMYK 0/0/5/7   CMYK 0/0/0/100 RGB 242/241/234 RGB 34/34/34

HEX #F2F1EA   HEX #222222

Allowed and not allowed variants.

Here are some examples of logo variations that can
be used and some examples that should be avoided.

Main logo

Grayscale variant is allowed
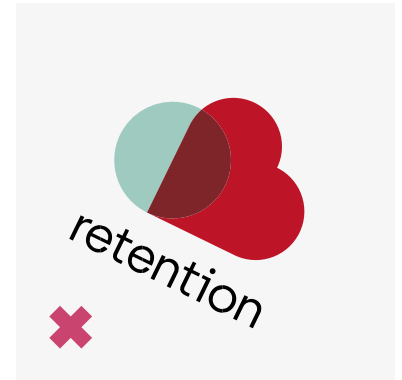
Do not rotate
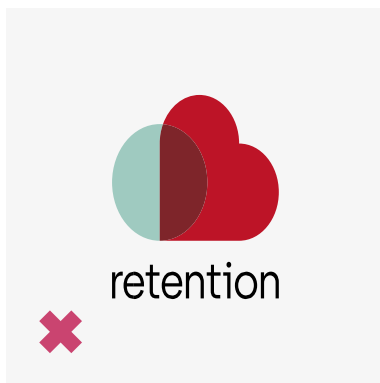
Do not deform

Do not change the colours

Do not apply any effect

Do not apply to backgrounds

that hinder readability

Do not use a different font
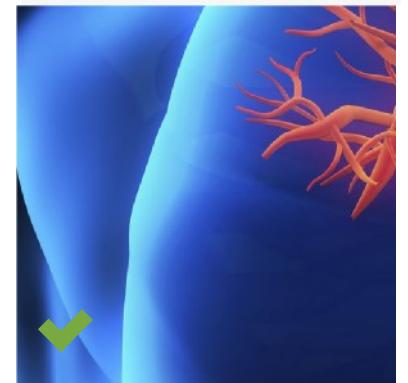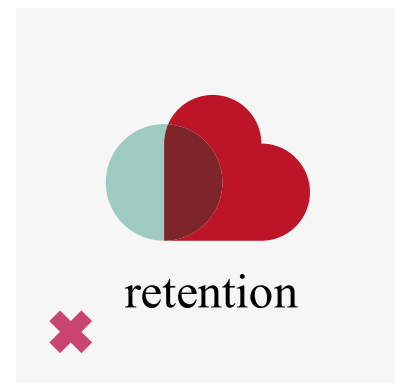
Monochrome version can be applied on coloured backgrounds, taking care that legibility is preserved.

Examples of embossed use.

Example of a monochrome version of the logotype being used on a photograph.
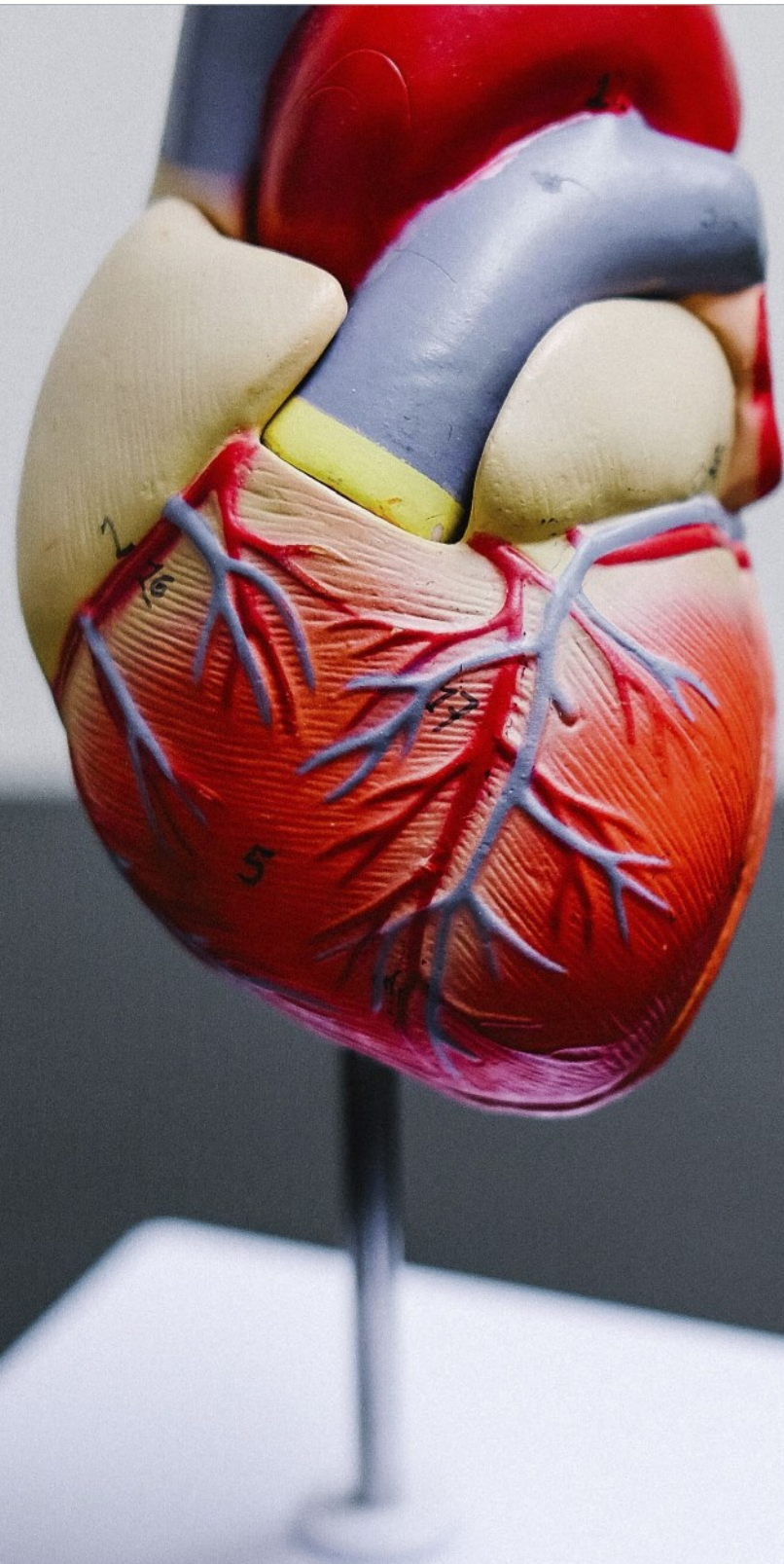
Heart failure patient management and interventions using continuous patient monitoring outside hospitals and real world data

Example of a monochrome version of the logo used on a slide in a presentation.

Example of using the logo in the interface of a device.

Example of using the logo in social media.

Logo file directory.

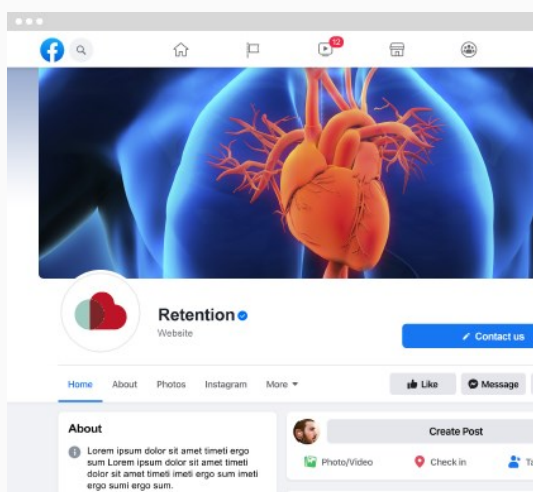|			
	VECTOR	**retention-logo-colors.pdf**	CMYK • transparent background
	RASTER	**retention-logo-colors.tif** **retention-logo-colors.jpg** **retention-logo-colors.png**	CMYK RGB RGB • transparent background
	VECTOR	**retention-logo-colors-payoff.pdf**	CMYK • transparent background
	RASTER	**retention-logo-colors-payoff.tif** **retention-logo-colors-payoff.jpg** **retention-logo-colors-payoff.png**	CMYK RGB RGB • transparent background
	VECTOR	**retention-logo-grayscale.pdf**	CMYK • transparent background
	RASTER	**retention-logo-grayscale-payoff.tif** **retention-logo-grayscale-payoff.jpg** **retention-logo-grayscale-payoff.png**	GRAYSCALE RGB RGB • transparent background
	VECTOR	**retention-logo-grayscale-payoff.pdf**	CMYK • transparent background
	RASTER	**retention-logo-grayscale-payoff.tif** **retention-logo-grayscale-payoff.jpg** **retention-logo-grayscale-payoff.png**	GRAYSCALE RGB RGB • transparent background
	VECTOR	**retention-logo-monochrome-black.pdf**	CMYK • transparent background
	RASTER	**retention-logo-monochrome-black.tif** **retention-logo-monochrome-black.jpg** **retention-logo-monochrome-black.png**	GRAYSCALE RGB RGB • transparent background
	VECTOR	**retention-logo-monochrome-black-payoff.pdf**	CMYK • transparent background
	RASTER	**retention-logo-monochrome-black-payoff.tif** **retention-logo-monochrome-black-payoff.jpg** **retention-logo-monochrome-black-payoff.png**	GRAYSCALE RGB RGB • transparent background
	RASTER	**retention-logo-monochrome-white.png**	RGB • transparent background
	RASTER	**retention-logo-monochrome-white-payoff.png**	RGB • transparent background

Annex 2 - RETENTION newsletter template
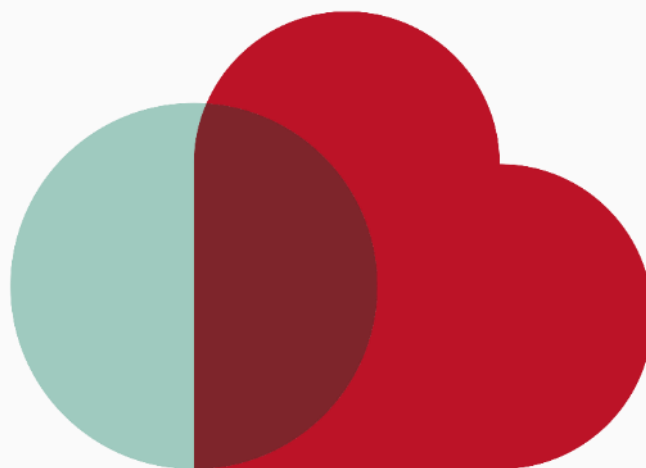
HEART FAILURE PATIENT MANAGEMENT AND INTERVENTIONS USING CONTINUOUS PATIENT MONITORING OUTSIDE HOSPITALS AND REAL WORLD DATA
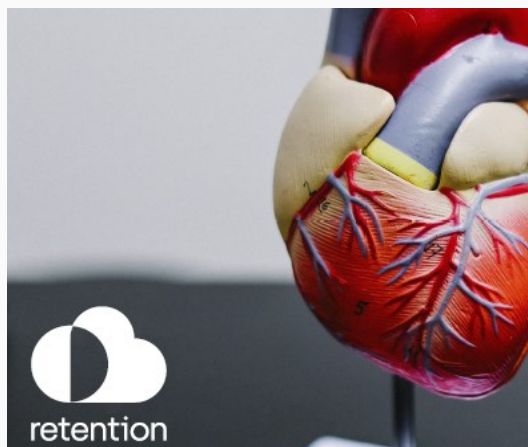
LATEST NEWS

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Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua.
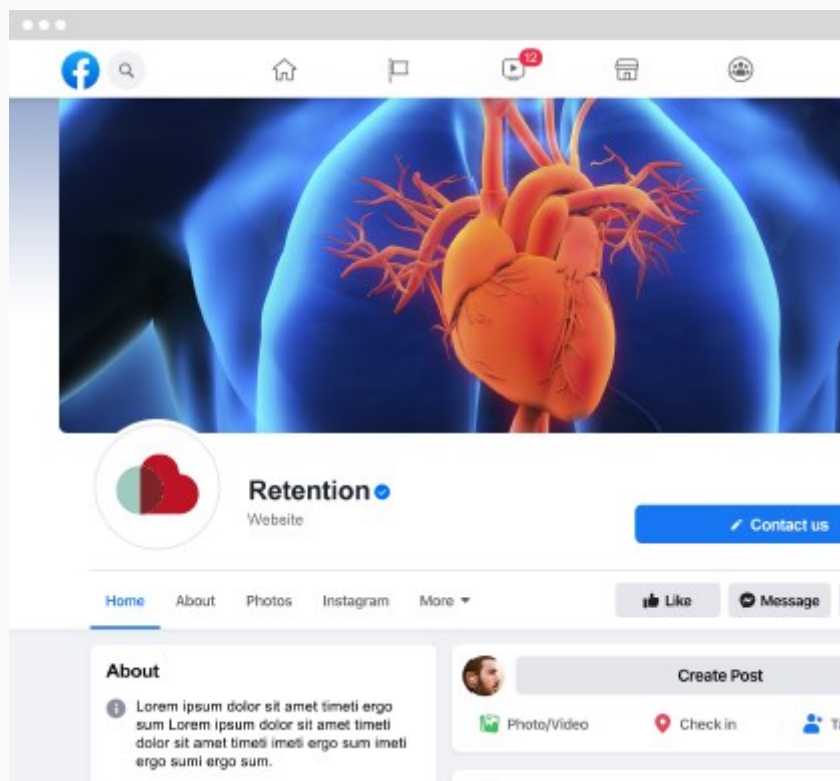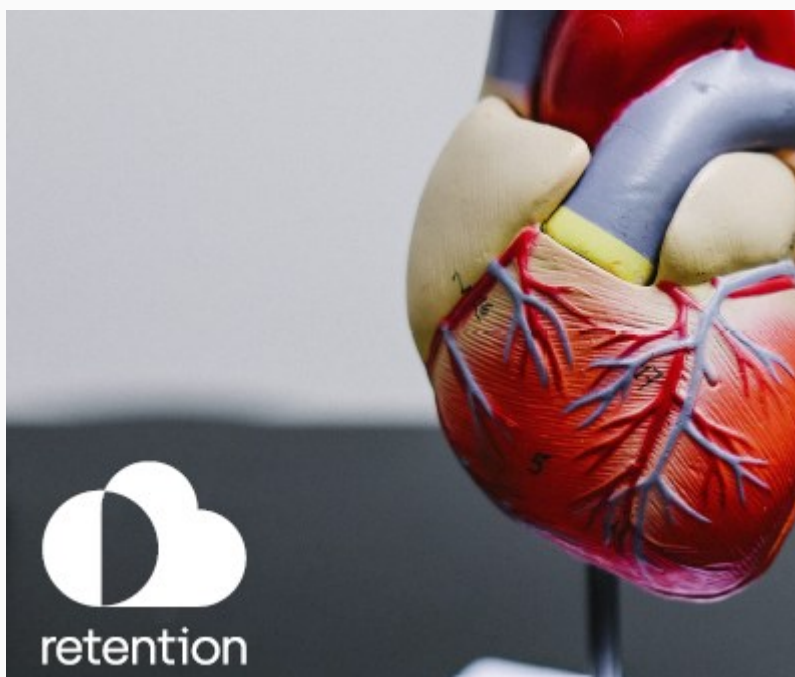
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EVENTS

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Deliverable D9.2 - Communication, Dissemination, Impact
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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 965343.
ec.europa.eu/digital-single-market/en/policies/ehealth

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Annex 3 - RETENTION deliverables template

Horizon 2020 Project RETENTION

"HEART FAILURE PATIENT MANAGEMENT AND INTERVENTIONS USING CONTINUOUS PATIENT MONITORING OUTSIDE HOSPITALS AND REALWORLD DATA"

Research and Innovation Action
H2020-SC1-BHC-2018-2020
GA 965343

Duration: 48 months from 01/05/2021
Coordinator: Institute of Communication and Computer Systems

Deliverable ID.:	**XX**	
Deliverable title:	**XX**	
Planned delivery date:	DD/MM/YYYY (MX)	
Actual delivery date:	DD/MM/YYYY (MX)	
Deliverable leader:	XX	
Contributing partners:	ALL	
Dissemination Level:	**X**	PU = Public;
		CO = Confidential
		Cl = Classified

Deliverable D9.2 - Communication, Dissemination, Impact
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Document information and history

Deliverable description (from DoA)

Please refer to the Project Quality Handbook for guidance on the review process and the release numbering scheme to be used in the project.

Version N.	Date	Author [Person and Organisation]	Reviewer [Person and Organisation]	Milestone*	Notes
V. 1.1	30/05/2021				

* The project uses a multi-stage internal review and release process, with defined milestones. Milestone names include abbreviations/terms as follows:

TOC = "Table of Contents" (describes planned contents of different sections);

- o *Intermediate: Document is approximately 50% complete – review checkpoint;*

ER = "External Release" (i.e. to commission and reviewers);

- o *Proposed: document authors submit for internal review;*
- o *Revised: document authors produce new version in response to internal reviewer comments approved: Internal project reviewers accept the document.*

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Heart failure patient management and interventions using continuous patient monitoring outside hospitals and realworld data.

2 About this Document

Heart failure patient management and interventions using continuous patient monitoring outside hospitals and realworld data.

Heart failure patient management and interventions using continuous patient monitoring outside hospitals and realworld data.

Role of deliverable

Heart failure patient management and interventions using continuous patient monitoring outside hospitals and realworld data.

Heart failure patient management and interventions using continuous patient monitoring outside hospitals and realworld data.

Relationship to other RETENTION deliverables

Heart failure patient management and interventions using continuous patient monitoring outside hospitals and realworld data.

Heart failure patient management and interventions using continuous patient monitoring outside hospitals and realworld data.

Structure of the document

Heart failure patient management and interventions using continuous patient monitoring outside hospitals and realworld data.

Heart failure patient management and interventions using continuous patient monitoring outside hospitals and realworld data.

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Horizon 2020 Project RETENTION
GA n. 965343

3 Heading 1

Heart failure patient management and interventions using continuous patient monitoring outside hospitals and realworld data.

Heart failure patient management and interventions using continuous patient monitoring outside hospitals and realworld data.

Heading 2

Heart failure patient management and interventions using continuous patient monitoring outside hospitals and realworld data.

Heart failure patient management and interventions using continuous patient monitoring outside hospitals and realworld data.

Heading 3

Heart failure patient management and interventions using continuous patient monitoring outside hospitals and realworld data.

Heart failure patient management and interventions using continuous patient monitoring outside hospitals and realworld data.

Heading 4

Heart failure patient management and interventions using continuous patient monitoring outside hospitals and realworld data.

Heart failure patient management and interventions using continuous patient monitoring outside hospitals and realworld data.

Table 1. Title of table.

Column A	Column B	Column C	Column D	Column E

Heart failure patient management and interventions using continuous patient monitoring outside hospitals and realworld data.

Heart failure patient management and interventions using continuous patient monitoring outside hospitals and realworld data.

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Figure 1. Kick-off people.

Heart failure patient management and interventions using continuous patient monitoring outside hospitals and real world data.
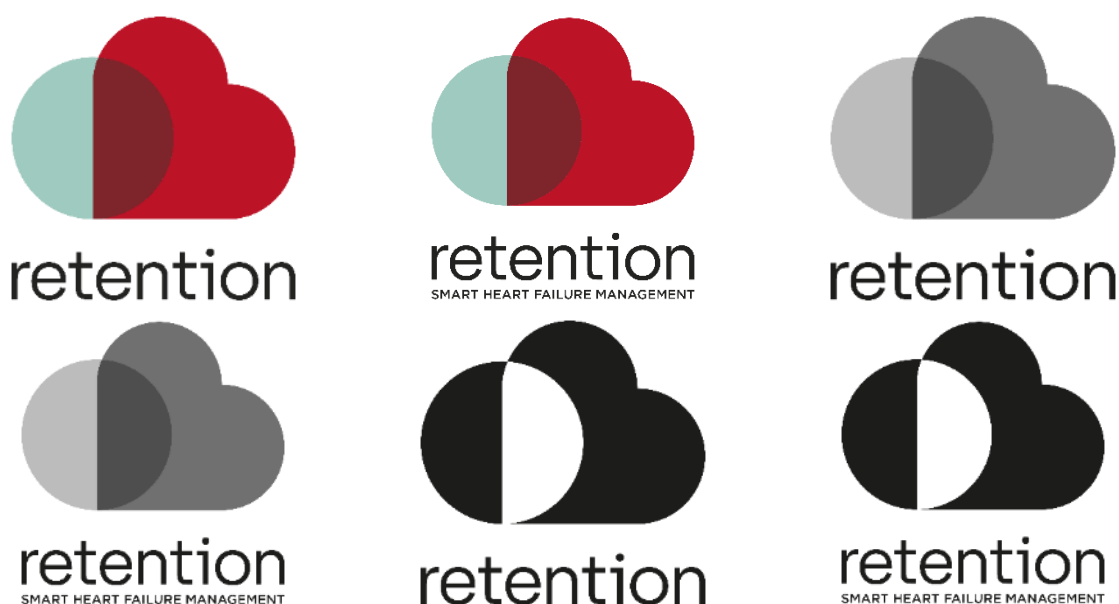

Figure 2. Versions of the RETENTION Logo.

Heart failure patient management and interventions using continuous patient monitoring outside hospitals and realworld data.

Heading 5

Heart failure patient management and interventions using continuous patient monitoring outside hospitals and realworld data.

> *Quote*: *"the European Union ('the EU'), represented by the European Commission ('the Commission'), represented for the purposes of signature of this Agreement by Head of Unit, Directorate-General for Communications Networks, Content and Technology, Data, Administration and Finance, Mikaela FARR-DAVID,".*

Annex 4 - RETENTION communication and dissemination reporting tool

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