



D9.4 - STANDARDIZATION AND CONCERTATION ACTIVITIES REPORT | YEAR 1

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GLOSSARY

ABBREVIATION	DESCRIPTION
AA	Levels of Conformance
AAL	Active and Assisted Living
AFE	Age-Friendly Environment
AHA	Active and Healthy Ageing
API	Application Program Interface
AT	Assistive Technologies
BAN	Body Area Network
CDA	Clinical Document Architecture
DG	Directorate General
DoA	Description of Action
EC	European Commission
EHR	Electronic Health Related

EIC	European Interoperability Cartography
EN	European Standards / European Norms
ETSI	European Telecommunications Standards Institute
EU	European Union
GA	Grant Agreement
GDPR	General Data Protection Regulation
HHR	Holistic Health Records
HIPAA	Health Insurance Portability and Accountability Act
HTML	HyperText Markup Language
ICT	Information and Communication Technologies
IEC	International Electrotechnical Commission
IOP	Interoperability
IPR	Intellectual Property Rights
ISO	International Organization for Standardization
IT	Information Technology
NGO	Non-Governmental Organization
PACS	Picture Archiving and Communication System
PHR	Patient Health Records
SHAFE	Smart Health Age-Friendly Environments
SME	Small Medium Enterprises
SEO	Social Economy Organizations
TC	Technical Committee

TBT	Technical Barriers to Trade
US	United States
WCAG	Web Content Accessibility Guidelines
WP	Work Package
WHO	World Health Organization
WTO	World Trade Organization

1. Executive Summary

The first **Standardization & Concertation Activities report** (D9.4) summarizes the results of the SmartWork actions within the WP9 task “Standardization & Concertation activities” (T9.3). This task (covering in total the first 36 months of the project duration) is led by CDC, with contributions of Byte, RtF-I, CAT, SPARKS and ECHAlliance. The present report refers to the first 12 months of the SmartWork project’s execution.

The methodology implemented in this task and its progress along the first year of execution, concerning all the standardization and concertation activities, is also documented within this report.

According to the project’s DoA, either task 9.3 as, subsequently, the present deliverable is subdivided into two main parts. The first one is dedicated to **Standardization Activities**, where technical partners describe the standards developed in various fields related to active and healthy ageing (e.g. mHealth, occupational health, inclusion) to identify aspects of existing standards that could apply for solutions developed in the project and suggest new standards or extensions. This sector will thus focus the SmartWork Service Interoperability, with special regard to healthcare data interoperability, pseudonymization, privacy and security processes, as well as analytics and machine learning.

Furthermore, the second part of this deliverable addresses the **Concertation Activities** involving SmartWork, by exploring the establishing of links and synergies with relevant projects, networks and joint initiatives, nationally and internationally, in order to enable scientific knowledge sharing, facilitated collaboration and exchange of research results. The ultimate objective is to create a unified approach of clustered projects working within the same scope, and to not only maximize their individual outcomes and effective impact, but also to gradually instigate the gathering and enhancing of siloed efforts performed by many European projects.

Finally, this document summarizes a set of guidelines for project work in the next two years regarding the main standardization priorities and concerns, as well as the concertation priorities, also presenting the accomplished meetings’ results and overall related activities.

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2. Introduction and scope

2.1. Role of the deliverable

The overall objective of the SmartWork project is to address the challenges faced by office workers as they grow old, as well as support their employers, in a holistic way, by designing, implementing and validating in real-world settings an ICT-enabled framework integrating unobtrusive and ubiquitous ICT tools and services supporting age-friendly working and living environments.

Following the same aim, and within the scope of WP9 “Dissemination and Exploitation”, this report intends to provide an overview of the SmartWork project’s progress, from January 2019 to December 2019 (M1 to M12), concerning the specific task “Standardization and Concertation Activities” (T9.3), through a detailed description of its most relevant developments, as well as the methodology and strategies required to achieve them in this first year.

The first part of this document is dedicated to **Standardization Activities**, where technical partners describe the standards developed in various fields related to active and healthy ageing (e.g. mHealth, occupational health, inclusion) to identify inadequacies of existing standards that could apply to solutions developed in the project and suggest new standards or amendments. This section presents the progress review of the standardization work, done by standardization groups with strong focus on the relevant regulatory and interoperability forums, also explaining the contribution of these results to the standardization process. The inherent task also aimed at identifying a set of interfaces and APIs for services, required on both the BAN network, the mobile and the connected devices, to enable the functionalities and business models identified in T9.2, as will investigate their applicability to pervasive monitoring systems to address the need for low computational complexity and low power consumption. Privacy and security will be key aspects in the standardization activities of the project. The European Directives and data protection standards (Opinion 2/2013 of the Article 29 Working Party of 27 February 2013 on apps on smart devices, General Data Protection Regulation GDPR EU 2016/6791) as well as the U.S. HIPAA will be the main references. The standardization process will also determine the commercial exploitation procedures for adjustments of the reference implementation under Open Source licensing constraints or for new licensing implementations.

Furthermore, the second part of this deliverable addresses the **Concertation Activities** involving SmartWork, by exploring the establishment of links and synergies with relevant projects, networks and joint initiatives, national and international wide, in order to enable scientific knowledge share, strengthened collaboration and exchange of research results. The ultimate objective consists of creating a unified approach of clustered projects working within the same scope, not only to maximize

1 <http://data.europa.eu/eli/reg/2016/679/2016-05-04>

their individual outcomes and effective impact, but also to gradually instigate the gathering and enhancing of siloed efforts performed by many European projects.

2.2. Relationship to other deliverables

By reporting on the Consortium standardization and concertation activities during year 1, the present deliverable (D9.4) follows next to the previous D9.1 “Communication and Dissemination Plan for Year 1” - focused in defining the dissemination and communication strategy and framework for the knowledge generated by the project during its first year of execution - and D9.2 “Project Web Presence” - dedicated to activities that further transfer and promote the project results. On the same due delivery (December 2019), the documents D9.3 “Year 1 Exploitation Report & Business Models” – aiming at reporting the activities towards exploitation and commercialization of the projects’ results, and also D9.5 “Communication and Dissemination Plan for Year 2” – intending to update the defined dissemination and communication strategy and framework of the project for the second year of execution, shall also be presented to the European Commission. The relationship between the present document and these previous and latter deliverables is better explained in Table 1.

TABLE 1: RELATIONSHIP BETWEEN D9.4. AND THE REMAINING DELIVERABLES DUE BY SMARTWORK PROJECT IN 2019.

Deliverable	Relationship to D9.4
D9.1	<u>Communication and Dissemination Plan for Year 1</u> : reported on the dissemination and communication strategy for year 1, including all relevant dissemination materials (e.g., logo, project templates), as also the framework for the knowledge generated by the SmartWork project. In this sense, it provided a defined structure and method for the project to reach wider audiences and potentially interested parties, allowing the emergence of concrete proposals for experience sharing and concerted activities, within SmartWork’s scope.
D9.2	<u>Project Web Presence</u> : reported on SmartWork’s web presence and communication activities (project website, wiki, blog, social media), which included a public and a secure section. The development of this website as the associated media channels also facilitated the project’s reach to other interested parties, namely in order to allow a better mutual communication and the consequent promotion of concertation activities within SmartWork purposes.
D9.3	<u>Year 1 Exploitation Report & Business Models (M12)</u> : will focus on the consortium activities towards exploitation and commercialization of the SmartWork results, including the initial Market Survey. Since concerted activities may pursue exploitation or commercial purposes, the standardization and concertation actions behind this document may also contribute to achieve future business partners, thus opening ways to further reach other exploitation possibilities.

D9.5	<p><u>Communication and Dissemination Plan for Year 2 (M12)</u>: will focus on the analysis of the results of the implemented dissemination and communication actions during year 1 and will also provide an updated strategy for year 2, considering the previously learned experience. Similarly, as in the first version of this document (D9.1), it will provide an updated and improved structure and method for the project to reach wider audiences and potentially interested parties, allowing the emergence of concerted activities, within SmartWork's scope.</p>
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Within WP9, this deliverable will later be complemented in 2020, during the third year of SmartWork's execution, by the SmartWork's Final Workshop (D9.9) - where the main outputs, findings and methodological advances will be presented to the European scientific community - and by the Final version of the IPR Management Plan (D9.11) – a report on IPR related issues as agreed by all consortium members, including the ones eventually generated through concertation activities.

3. Methodology

Task 9.4 brings together two different areas, however working in complementary ways: **standards** are mainly discussed and identified by the technical partners; **concertation activities** are overall led by end-users, business partners and complemented by the Dissemination Lead.

Although aiming at a common goal, namely the latter links of the SmartWork outcomes and system with relevant international concepts, projects and organisations, overall, the two activities hold many differences between them and will therefore be described in a separate, two-fold methodology, as follows.

3.1. Standardization Activities

3.1.1. Introduction to the SmartWork standardization approach

The standardization activities for the initial year of the project have focused on the investigation and identification of standards developed in various fields related to active and healthy ageing (e.g. mHealth, occupational health, inclusion) in order to identify potential inadequacies of existing standards that could apply for solutions developed within SmartWork and suggest new standards or amendments, for the ensuing year 2 and year 3 of the project. The overall methodology will primarily focus on standardization activities associated with the relevant regulatory and interoperability bodies, as well as on privacy and security aspects.

As project results become more mature over the second and the final year of the project, standardization activities and the overall process will also determine the commercial exploitation procedures for adjustments of the reference implementation under Open Source licensing constraints or for new licensing implementations.

The SmartWork Standardization Plan pursues the overarching aim to:

- investigate pertinent existing standards and ongoing standardization activities,
- identify gaps, where support for ongoing standardization activities would be useful, and
- initiate new standardization activities, if necessary.

It builds on and extends the results of projects, such as:

- UniversAAL² (UNIVERSal open platform and reference Specification for Ambient Assisted Living, 2010-02–2014) (CORDIS, European Commission, 2010-2014)
- ACTIVAGE³ (ACTivating InnoVative IoT smart living environments for AGEing well, ongoing project January 2017 - June 2020 under the H2020-EU.3.1.4. - Active ageing and self-management of health programme of Horizon2020)
- CrowdHealth⁴ (Collective wisdom driving public health policies, ongoing project March 2017 - February 2020 under the H2020-EU.3.1.5. – Methods and data programme of Horizon2020)
- Interopehrate⁵ (Interoperable EHRs at user edge, ongoing project January 2019 - June 2022 -EU.3.1.5.1—Improving health information and better use of health data programme of Horizon2020)

Other projects that have been referenced by the SmartWork Grant Agreement were also taken into account.

The project consortia mentioned above cooperated in various forums and formal alliances. For nearly all projects the legal frameworks concerning older people and standardization on the one hand, and the use of ICT to support the implementation and endorsement of legislation and standards on the other hand, have been important – if not key – issues. Since then, the important role of standards complementing legislation has become even more evident.

3.1.2. General introduction on technical standards and standardization

In spite of a large body of specialized literature on standardization, there are still many misconceptions and misunderstandings concerning:

- the role and nature of standardization in general;

² www.universaal.info

³ www.activageproject.eu

⁴ www.crowdhealth.eu

⁵ www.interopehrate.eu

- the relationship between technical standards and legal norms;
- the kinds/types of technical standards;
- the 'normative' character of standards and similar documents (also called 'deliverables') in the field of standardization.

Misunderstanding starts already with the basic definitions of 'standardization', 'standard', 'standardizing organization' and has repercussions into many technical, political, societal and economic areas.

Given the importance of standards for accessibility in combination with interoperability, this section aims at giving a concise overview which will be useful in the discussions about what kind of standard and by which organization is to be given prominence over others. This is also in line with the intention of the Decision of the European Parliament and of the European Council to establish a programme on interoperability solutions for the European public administrations, businesses and citizens (ISA2)⁶: "The ISA2 Programme will develop and support the European Interoperability Cartography (EIC) as an instrument to map and analyse the interoperability landscape in Europe and to identify not only solutions that are available, but also those that are still lacking. On that basis, it will continue to support existing solutions, create new ones and act as a facilitator for interoperability solutions resulting from other European Union initiatives that could become operational in the Union's digital service delivery channels. It will thus avoid duplication of effort, strengthen collaboration between Member States and Commission services, and actively promote the re-use of existing solutions⁷.

Under technical standards the following differences of meaning of 'standard' cause confusion:

- 'formal' or 'de jure' standards
- 'industry' (or 'consortium') or 'de facto' standards
- individual enterprise standards

'Standard' is, however, also used in connection with all kinds of concepts and issues, which most often have no, or only an indirect, relation to technical standards, as for example, in:

- standard language
- standard of living and working
- standard equipment
- this or that 'standard device' or 'standard method', etc.

⁶ https://ec.europa.eu/isa2/isa2_en

⁷ https://ec.europa.eu/isa2/actions/towards-european-interoperability-architecture_en

This part of Deliverable D9.4 focuses on formal or 'de jure' standards, but takes major industry or 'de facto' and enterprise standards into account. A national standard will be considered at a later stage, if it is widely adopted by many countries and in many applications.

Not least due to a number of international agreements – especially the Technical Barriers to Trade (TBT) Agreement (as of 1995)⁸ which is binding for the member countries of the World Trade Organization (WTO) – the international harmonization of standards and thus the standards themselves gained importance at all levels. According to the TBT Agreement, technical regulations, standards, and conformity assessment procedures should be non-discriminatory and should not create unnecessary obstacles to trade. The rules are strongly pushing towards international standards. Though, at the same time, WTO recognises members' right to implement measures to achieve legitimate policy objectives, such as the protection of human health and safety, or protection of the environment.

The world of standardization today is highly complex with many competing and cooperating stakeholders, such as standardization bodies working in the framework of regional and international standards organizations, intergovernmental organizations and individual governments, organizations in scientific-technical communities, industry consortia and individual enterprises, and last but not least, organizations or communities related to the World Wide Web. They are competing for a more widely recognition of their standards. No wonder that the need for harmonizing various standards is increasing.

If ISO/IEC Guide 2:2004 defines:

*"1.6.1 international standardization in which involvement is open to relevant bodies from all countries"*⁹

it emphasizes the view of 'formal' standards (or 'de-jure' standards) in contrast to 'de facto' standards (mostly 'industry' standards). In this connection AEGIS¹⁰ D5.5.1 states:

"A more practical definition of a standard in the computer world is: A definition or format that has been approved by a recognized standards organization or is accepted as a 'de facto' standard by the industry. This recognizes 'de facto' standards, as those emerging from a 'formal' standards process and recognized standards body".

Regarding the field of accessibility and interoperability, standards not only exist for programming languages, operating systems, data formats, communications protocols, and products interfaces, but also to comprise management standards, methodology standards, socio-politically motivated

⁸ https://www.wto.org/english/tratop_e/tbt_e/tbt_e.htm

⁹ www.iso.org

¹⁰ HIMSS. HIMSS Dictionary of Healthcare Information Technology Terms, Acronyms and Organizations. ISBN: 978-1-938904-03-5

standards, pertinent certification schemes, and increasingly data or content (both regarding pertinent methods and standardized data and content itself).

In this connection it is necessary to say that from the user's perspective, information is all content, while from the computer programmer's perspective, it is all data.¹¹

The investigation and analysis in this connection is to be carried out first of all under an accessibility and interoperability perspective, duly recognizing that interoperability extends far beyond technical interoperability. The results of this task also acknowledge the importance of relevant policies at international and EU-level, Directives and other legal instruments – some of which are specifically referring also to standardization.

3.1.3. Methodology for the Standardization Plan

The methodology developed for the Standardization Plan closely follows the main aim of this task in WP 9 (see above) and comprises five phases:

- **Phase 1:** investigation and general evaluation.
- **Phase 2:** identification and evaluation of standards of primary relevance to SmartWork.
- **Phase 3:** identification of gaps and contribution to standardization.
- **Phase 4:** organizing compliance by SmartWork to standards of primary interest.
- **Phase 5:** organizing contributions to ongoing standardization activities and initiating new standardizing activities, as well as disseminating information on the standardization activities of SmartWork.

The results of Phase 1 are presented in section 4 of this deliverable. The outputs of phases 2 to 5 will be developed during years 2 and 3 of the project and delivered in the next versions of D9.4.

PHASE 1: Investigation and general evaluation

In the initial investigation and general evaluation phase the following tasks were carried out during year 1:

- a general introduction to standardization in relation to law was elaborated;
- several data collections on existing standards in the field of accessibility (including eAccessibility & eInclusion), assistive technologies (AT) and interoperability (IOp) were merged, updated and revised.

PHASE 2: Identification and evaluation of standards of primary relevance to SmartWork

¹¹ Bob Boiko, *Content Management Bible*, 2nd edition, Wiley, ISBN: 978-0-764-57371-2

In this phase, a number of existing collections of information on pertinent standards was used as starting point for the investigation and evaluation of most relevant standards to SmartWork. A large percentage of standards was recorded, and information updated during the first year of the project. Updating and revision necessitated modifications in about 40% of the information on standards due to:

- changed status of standards (withdrawn, replaced, revised, amendments added, new standards)
- correction of inconsistencies with respect to the recording of data or method of compilation
- editing of inconsistencies with respect to titles and other details
- adding links to facilitate access to the standards

PHASE 3: Identification of gaps and contribution to standardization

This phase will be devoted to the identification of gaps in preparation of contributions to standardization activities.

PHASE 4: Organizing compliance by SmartWork to standards of primary interest

In this phase decisions on the standards of primary relevance to SmartWork have to be taken and compliance to these standards by all project partners to be organized. For this purpose, the standards of

- ETSI¹² - Technical Committee (TC) Smart Body Area Network (SmartBAN)
- HL7¹³ - Health Level 7
- FIHR¹⁴ - Fast Healthcare Interoperability Resources
- DICOM¹⁵ - Digital Imaging and Communications in Medicine

These standards were chosen to serve as a short-list of candidates to be taken for further evaluation and distinction into:

- general (or default) standards which are so widely accepted and applied that nobody can reasonably replace them by a new approach or set of rules; they have to be applied obligatorily throughout the project
- standards of primary relevance to SmartWork (especially, if there are competing standards around which a choice needs to be taken or decision for work to be done e.g. with respect to adaptations)

¹² www.etsi.org/committee/1413-smartban

¹³ www.hl7.org

¹⁴ hl7.org/fhir www.hl7.org/fhir

¹⁵ www.dicomstandard.org

- standards of secondary relevance to SmartWork (i.e., more or less the remaining standards on the initial short list)

PHASE 5: Organizing contributions to ongoing standardization activities and initiating new standardizing activities, as well as disseminating information on the standardization activities of SmartWork

In this phase contributions to ongoing standardization work, as well as initiation of new standardization activities will be organized and carried out. As these are highly communication intensive, this phase can also be used to promote the SmartWork project and its contribution to the standardization field.

Needless to say, the SmartWork Standardization Plan is going to be promoted in coordination with the dissemination and training strategy.

3.2. Concertation Activities

3.2.1. Methodology for the Concertation Plan

Regarding SmartWork's Concertation Activities, for the first 12 months, the project progressively reached out to the existent ecosystem of key stakeholders around this theme, aiming to ensure not only a successful dissemination and exploitation process, but also to establish links and synergies with relevant projects, networks and joint initiatives, nationally and internationally, enabling scientific knowledge sharing as well as close collaboration and exchange of research results.

In this sense, concertation meetings were promoted with several relevant actors in the field, including academia and research, policymakers and governments (local, regional and national), regulatory bodies and agencies, health services and authorities, as well as social care organisations and potential investors in this sector.

The main method behind the structure and establishment of SmartWork concertation activities was inspired by the **Constellation Analysis**¹⁶, which is a "tool used to clarify and organize perceptions of different stakeholders about critical situations or problems", through a "transparent and mutually accepted visualization of factors, systematically arranged under four main categories":

- (1) **actors** – primary, secondary and tertiary future end-users of the SmartWork services, as well as existing networks and key stakeholders;
- (2) **rules and concepts** (legal and ethical framework, deontology rules and other relevant rules, as well as similar projects or research groups not yet directly involved in these networks, but that might be relevant to them);
- (3) **natural elements** (understood as natural barriers or facilitators for the project, such as the age range of the participants - considering the retirement age in each country and/or health conditions associated to them); and
- (4) **technical elements** (digital literacy, access to work-related technology – computer, tablet, smartphone).

In its original form, this methodology allows the establishment of connections between those elements, to be discussed and classified as being: (a) directed, (b) conflictive, (c) non-existent, (d) contradictory, (e) reluctant or (f) interactive, through a guidance process towards the development of concerted solutions, also known as Constellation Analysis follow-up. In the context of SmartWork, this four-layered gradual scheme was adapted to guide decisions and power the most relevant concertation options, being thus operationalized as follows:

16

https://www.innovate.tu-berlin.de/fileadmin/fg123_innovate/text_files/flyer/App_Wocat_Constellation_Analysis_EN_INNOVATE.pdf

- (1) The first steps consisted in activating the **existing networks and key stakeholders**, through the dissemination of the SmartWork project's objectives and potential to other consortiums and partners, already working in the active and healthy ageing sector, aiming not only to spread the SmartWork main concepts and ambition, but also to eventually incorporate any specific feedback they could provide, leading to a better outcome in the future.
- (2) The second stage was dedicated to reaching out **similar European research groups or projects** active on smart ageing issues in work contexts, in order to create a wider ecosystem or partnerships, that may produce future collaboration results, through a unified and concerted perspective among all stakeholders.
- (3) This concertation effort, based on the sharing of existing knowledge and experiences between the different and relevant stakeholders in the field, is actually expected to raise awareness and ultimately lead to **significant, new and organized knowledge**, considering the end-user real needs, existing regulations and concepts, natural and technical factors gathered and discussed through these working opportunities and joint actions, empowering the project outcomes and expected achievements beyond the current state-of-the-art.
- (4) Finally, the fourth stage of this strategy considers that each one of the consortium partners and stakeholders is able to **bring back the main new add-ons and results** of both the dissemination and concertation processes to their original (and eventually growing) constellation of networks and partnerships, so that this whole methodology of dissemination¹⁷ and concertation activities could be perpetuated along the SmartWork's execution time.

17 Cf. Communication and Dissemination Plan for Year 2 (D9.5) for further details.

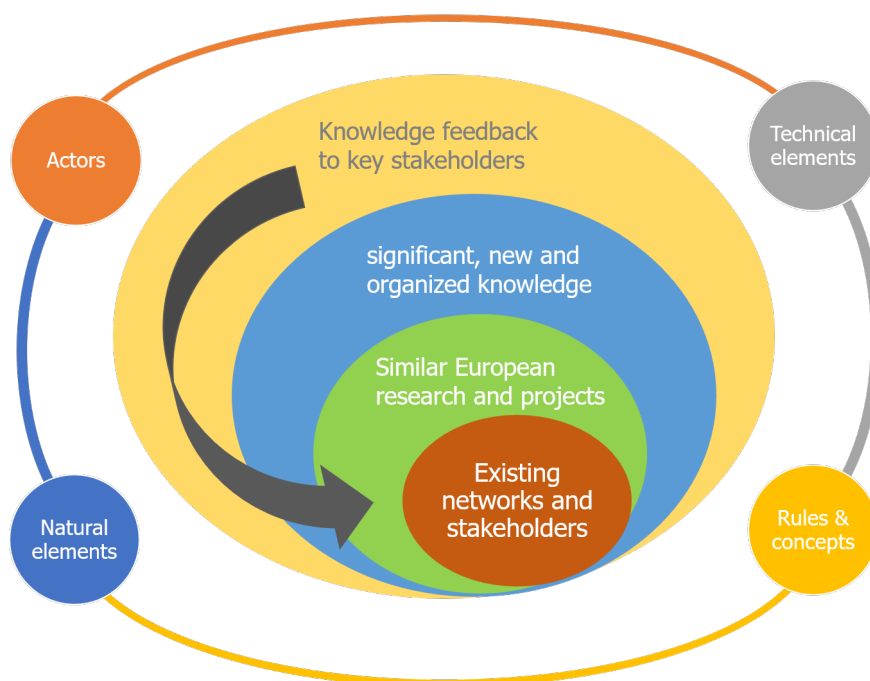


FIGURE 1 - CONCERTATION METHODOLOGY IN SMARTWORK

This iterative process aims to better understand the relationships between those four categories of factors, as well as to achieve consensus between divergent positions, paving the way for better informed decision making, while also facilitating a negotiated management of the standardization purposes with the concertation activities.

Considering that this document aims, on one hand, at exploring the operationalization of the first stage of the proposed methodology (regarding the activation of the consortium existing networks and key stakeholders) and, on the other, at achieving the second stage, dedicated to reaching out similar European research groups or projects, and given the fact that only five partners are formally involved in the Concertation task, CDC proposed a specific methodology for outreach and collective engagement, based on a mini-workshop organised during the second plenary meeting of the consortium, in Enschede.

This small workshop involved all consortium partners and it was based on the above explained Constellation Analysis Methodology, developed by TU Berlin. It aimed to identify potential links, projects and partners that could be included in the planning and development of these activities for the next months of the project.

From the four possible elements to be potentially added on (actors, regulations and concepts, natural and technical barriers or facilitators), the most participated were actually the first ones - actors -, with partners suggesting the following additional projects and stakeholders:

- Athens Association of Alzheimer Disease and Related Disorders¹⁸;
- DEM@ENTORING project (Erasmus+)¹⁹;
- AI4EU project²⁰
- GateKeeper²¹
- EETN (Hellenic Artificial Intelligence Society - Greece)²²;
- Fundación ONCE (Organization working for social inclusion of persons with disabilities)²³;
- Human Resources personnel
- Older people's organizations in The Netherlands

Secondly, on the concepts and regulations criterion, partners proposed the following:

- TIGRA²⁴ (Network of physiotherapy centres that develop standards for work wellbeing programs – NL);
- POSITIVE²⁵ (Additional funding employing people of 50+ - The Netherlands);

At this point, no additional natural or technical barriers were identified by the SmartWork consortium. Further developments are thus expected, once these projects and potential stakeholders are invited to exchange experience and knowledge with the SmartWork consortium, in order to enrich and better achieve its aims.

4. Standardization and Regulatory Overview

4.1. Main outcomes of phase 1 - investigation

This section is focused on describing the areas and various fields that SmartWork is tackling with respect to mobile health services, occupational health aspects for the older adults, inclusion at work

18 http://www.weareallcitizens.gr/projects_en/athens-association-of-alzheimers-disease-and-related-disorders.html#.XeRQ1ej7SMo www.weareallcitizens.gr/projects_en/athens-association-of-alzheimers-disease-and-related-disorders.html#.XeRQ1ej7SMo

19 www.twitter.com/dementoring_pro/

20 <https://www.ai4eu.eu/> www.ai4eu.eu/

21 <https://www.gatekeeperhq.com/> www.gatekeeperhq.com/

22 <https://www.eetn.gr/index.php/about-eetn> www.eetn.gr/index.php/about-eetn

23 <https://www.fundaciononce.es/> www.fundaciononce.es/

24 <https://tigra.informens.nl/live/en/what-is-informens> [www.tigra.informens.nl/live/en/what-is-informens](http://tigra.informens.nl/live/en/what-is-informens)

25 <https://ondernemersplein.kvk.nl/zoeken/> [www.ondernemersplein.kvk.nl/zoeken/](http://ondernemersplein.kvk.nl/zoeken/)

for the older workers, etc., with the aim to identify in the following sections the relevant information which articulates with relevant standards an regulatory framework.

4.2. Standardization Bodies, Groups and Committees

Identify relevant standardization bodies, committees and groups working on standards and interoperability aspects for producing results towards the areas related to SmartWork mentioned in the introduction.

- **ETSI²⁶** - Technical Committee (TC) Smart Body Area Network – SmartBAN: The ETSI SmartBAN committee is responsible for standardization to support the development and implementation of Smart Body Area Network (BAN) technologies (Wireless BAN, Personal BAN, Personal Networks etc.) in health, wellness, leisure, sport and other relevant domains. This technology uses small, low power devices to support a range of medical, health improvement, personal safety and wellbeing, sport and leisure applications. It has developed and released standards for service and application standardized enablers and interfaces, APIs and infrastructure for interoperability management, measurements and modelling of SmartBAN applications as well as unified data representation formats, semantic and open data models.
- **HL7v2²⁷**: HL7 and its members provide a framework (and related standards) for the exchange, integration, sharing, and retrieval of electronic health information. These standards define how information is packaged and communicated from one party to another, setting the language, structure and data types required for seamless integration between systems. HL7 standards support clinical practice and the management, delivery, and evaluation of health services, and are recognized as the most commonly used in the world. HL7's Version 2.x (V2) messaging standard is the workhorse of electronic data exchange in the clinical domain and arguably the most widely implemented standard for healthcare in the world. This messaging standard allows the exchange of clinical data between systems. It is designed to support a central patient care system as well as a more distributed environment where data resides in departmental systems.
- **HL7 FHIR²⁸**: Fast Healthcare Interoperability Resources (FHIR) is a next generation standards framework created by HL7. FHIR combines the best features of HL7's v2, HL7 v3 and CDA product lines while leveraging the latest web standards and applying a tight focus on implementability. FHIR solutions are built from a set of modular components called "Resources". These resources can easily be assembled into working systems that solve real

²⁶ <https://www.etsi.org/committee/1413-smartban>

²⁷ https://www.hl7.org/implement/standards/product_brief.cfm?product_id=185

²⁸ hl7.org/fhir

world clinical and administrative problems at a fraction of the price of existing alternatives. FHIR is suitable for use in a wide variety of contexts – mobile phone apps, cloud communications, Electronic Health Related data sharing, server communication in large institutional healthcare providers, and much more. A central challenge for healthcare standards is how to handle the large variability caused by diverse healthcare processes. Over time, more fields and optionality are added to the specification, gradually adding cost and complexity to the resulting implementations. The alternative is relying on custom extensions, but these create many implementation problems too. FHIR solves this challenge by defining a simple framework for extending the existing resources and describing their use with Profiles. All systems can read all resources, but applications can add more control and meaning using profiles. Many healthcare contexts require extensive local agreements. In addition, each resource carries a human-readable text representation using html as a fall-back display option for clinical safety. This is particularly important for complex clinical information where many systems take a simple textual/ document-based approach. FHIR Resources contain multiple data blocks like a local extension, the human readable HTML presentation, and the standard defined data content. These resources can be used for administrative concepts such as patient, provider, organization and device as well as a wide variety of clinical concepts covering problems, medications, diagnostics, care plans, financial concerns and more.

- **DICOM²⁹:** Digital Imaging and Communications in Medicine (DICOM) is the international standard to transmit, store, retrieve, print, process, and display medical imaging information. DICOM makes medical imaging information interoperable, integrates image-acquisition devices, PACS, workstations, VNAs and printers from different manufacturers, is actively developed and maintained to meet the evolving technologies and needs of medical imaging and is free to download and use in developed services, applications, and products.
- **ISO/IEC 24751³⁰:** ISO/IEC 24751 is intended to meet the needs of learners with disabilities and anyone in a disabling context. ISO/IEC 24751-1:2008 provides a common framework to describe and specify learner needs and preferences on the one hand and the corresponding description of the digital learning resources on the other hand, so that the individual learner preferences can be matched with the appropriate user interface tools and digital learning resources. The Cloud4all project, one of the first European-funded initiatives that initiated the development of the Global Public Inclusive Infrastructure, also used within SmartWork, contributed to the revision of the AccessForAll framework for the description of personal preferences.

²⁹ <https://www.dicomstandard.org/>

³⁰ <https://iso.org/standard/41521.html>

- **ISO/IEC 24752-8:2018³¹**: Information technology – User interfaces – Universal Remote Console – Part 8: User interface resource framework. The ISO/IEC 24752 standards specify the basic concepts and document formats for the Universal Remote Console ecosystem. In its second edition, the URC technology has been revised to be simpler to implement and based on current technologies.
- **STANDARD – EN 301 549³²** is titled “Accessibility requirements suitable for public procurement of ICT products and services in Europe”. It specifies functional performance statements (chapter 4) and functional accessibility requirements (chapters 5 to 13) for accessible products and services. The functional accessibility requirements are sorted into the following nine product categories, each contained in a chapter:
 - Chapter 5. Generic requirements
 - Chapter 6. ICT with two-way voice communication
 - Chapter 7. ICT with video capabilities
 - Chapter 8. Hardware
 - Chapter 9. Web content (based on WCAG 2.0 A and AA success criteria)
 - Chapter 10. Documents (based on WCAG 2.0 A and AA success criteria)
 - Chapter 11. Non-Web software (based on WCAG 2.0 A and AA success criteria)
 - Chapter 12. Documentation and support services
 - Chapter 13. Relay and emergency services

There are two alternative ways for products to comply with. The first one is to prove that a product fulfils the functional performance provisions, i.e. that it is fully usable by all persons, regardless of physical, cognitive, or sensory abilities. The second way is to comply to all functional accessibility requirements that are relevant to the product. The Accessible ICT Procurement Kit is available to assist the user in identifying the relevant requirements for typical product types (e.g. a smartphone).

In Europe, EN 301 549 is probably the most important accessibility standard today and will most likely be so in the near future. The European Directive on Accessibility of the websites and mobile applications of public sector was originally published in 2014 and mandates European governments to make their websites and mobile applications comply to EN 301 549. Specifically,

- Any new public website created on or after September 23, 2019 must comply.

³¹ <https://iso.org/standard/41521.html>

³² <https://iso.org/standard/70272.html>

- All public websites (including existing sites) must comply by September 23, 2020.
- All mobile apps in the public sector must comply by June 23, 2021.

4.3. Standardization and Interoperability Projects

- **UniversAAL**³³: The main goal of the universAAL project was to make it easier for the European ICT industries to develop and successfully deploy AAL solutions. To achieve this, the project developed an open standardized platform and specification on which the AAL service providers can quickly and cheaply build Active and Assisted Living services. The project also assisted developers by providing development tools to further decrease the development costs. Moreover, universAAL helped to further expand the AAL market by providing an application store, called uStore, through which developers, service providers and end users can offer and obtain AAL applications.
- **ACTIVAGE**³⁴: is a European Multi Centric Large-Scale Pilot on Smart Living Environments. Its main objective is to build the first European IoT ecosystem across 9 Deployment Sites 7 in seven European countries, reusing and scaling up underlying open and proprietary IoT platforms, technologies and standards, and integrating new interfaces needed to provide interoperability across these heterogeneous platforms. These deployments will enable the deployment and operation at large scale of Active & Healthy Ageing IoT based solutions and services, supporting and extending the independent living of older adults in their living environments, and responding to real needs of caregivers, service providers and public authorities. The vision of ACTIVAGE is to be the global world-wide reference for providing the evidence that standard-secure-intraoperative IoT ecosystems enable new business models and cost-effective solutions for Active and Healthy Ageing, contributing to the sustainability of the health and care systems, the competitiveness of the European industry through innovation, and the improvement of the quality of life and autonomy of older adults in the form of independent living. In more detail it focuses on promoting the benefits of Active & Healthy Ageing on:
 - health and social care policy makers,
 - service providers,
 - senior citizens and their families,
 - IoT technology industry,

³³ <https://www.universaal.info/>

³⁴ www.activageproject.eu

- SME's and entrepreneurs
- **CrowdHEALTH³⁵****Error! Hyperlink reference not valid.:** is an international research project partially funded under the Horizon 2020 Programme of the European Commission that intends to integrate high volumes health-related heterogeneous data from multiple sources with the aim of supporting policy making decisions. CrowdHEALTH is delivering a secure ICT platform to collect and aggregate high volumes health data from multiple information sources in Europe. It also proposes the evolution of patient health records (PHR) towards Holistic Health Records (HHRs) enriched to become "Social HHRs" to capture the clinical, social and human factors. Today's rich digital information environment is characterized by the multitude of data sources. There are extremely large amounts of medical data but the currently collected data are heterogeneous, spread across different health care providers and systems that operate independently. Due to this fact it is quite common that important events related to health are missed.
- **InteropEHRate³⁶:** aims to support peoples' health by opening them up new ways to make health data available where needed. To make this possible, key health data is managed in "patients' hands", i.e. through Smart EHRs (S-EHR) on mobile devices. Data is always transferred via highly secure channels including a direct device to device. The project enables patients to be in full control of the usage and the routes of their health data. The central instrument, being laid in "patients' hands" is the Smart EHR (S-EHR), leveraging a set of new protocols for secure and cross border exchange of health data.
- **openURC Alliance³⁷:** its mission is to promote the Universal Remote Console (URC) and associated standards and its application. While ISO/IEC 24752 is the conceptual basis for URC, openURC's Technical Committee (TC) develops implementation guidance for specific URC technologies in the form of Technical Reports.
- **GPii:** Global Public Inclusive Infrastructure works with existing and new assistive technologies and accessibility features already present on a device or platform. GPii will extend the number of its supported features to include the preferences and adaptations derived from the co-design activities that will be carried out in the SmartWork project.

These will include parameters extracted from the sensor network, extending the GPii to implement context-aware capabilities, as well as parameters related to the workers' abilities and psychological status, as captured by the SmartWork system.

GPii follows ongoing European and international standardization efforts that include but is not limited to: ISO/IEC JTC1 SC35, ISO/IEC JTC1 SC36, W3C WAI Protocols and Formats,

³⁵ www.crowdhealth.eu

³⁶ www.interopehrate.eu

³⁷ <https://openurc.org>

ISO/IEC JTC1 Special Working Group on Accessibility, open URC Alliance, European Mandate 376.

As an overview of the standardization roadmap, the following concept map (

Figure 2) illustrates the various topic areas, standards and standardization groups GPII is working with, and how they relate to each other.

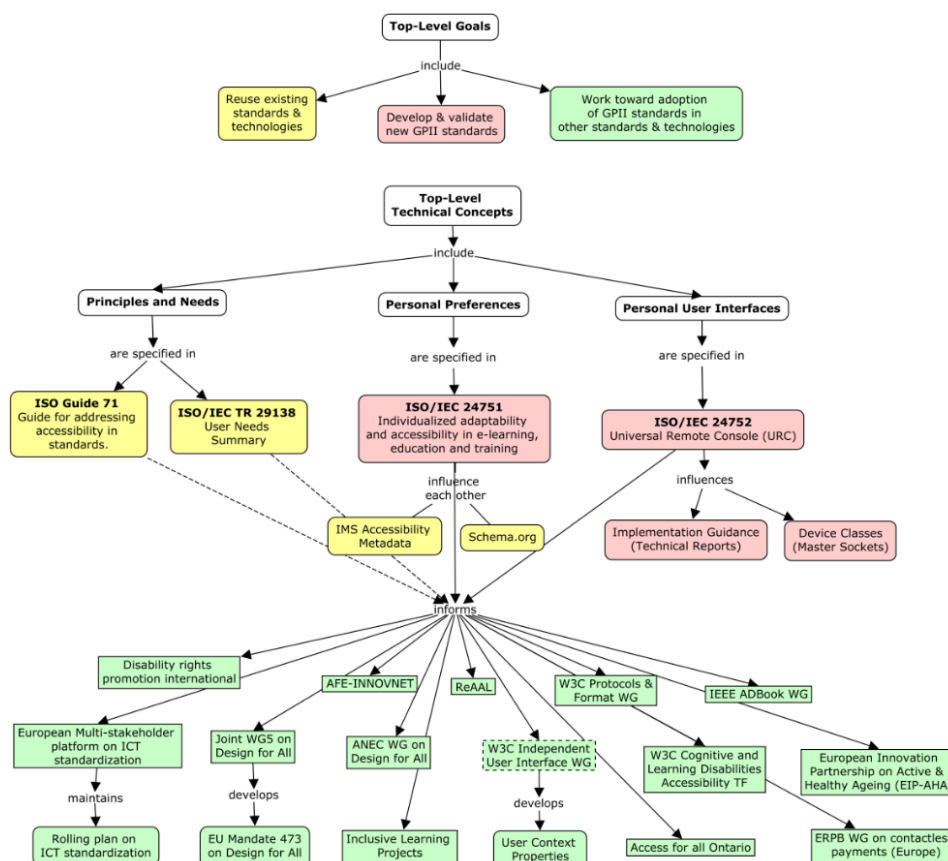


FIGURE 2: CONCEPT MAP OF STANDARDIZATION AND CONCERTATION ACTIVITIES IN GPII AND NETWORK OF EXTERNAL COLLABORATORS.

4.4. Regulatory Framework

This section aims to identify standardization groups with strong focus on the relevant regulatory and interoperability forums and review the progress of regulatory work and results will contribute to the standardization process.

4.4.1. ESCO³⁸

ESCO - European Skills, Competences, Qualifications and Occupations is a European Commission project that consists of a standard description for occupations, run by Directorate General Employment, Social Affairs and Inclusion (DG EMPL). Its first full version (ESCO v1) was published on July 2017. The latest version can be downloaded or retrieved through the ESCO API.

ESCO aggregates the European multilingual classification of Skills, Competences, Qualifications and Occupations, working as a "dictionary that describes, identifies and classifies professional occupations, skills and qualifications relevant for the EU labour market and education and training". ESCO provides descriptions of 2942 occupations and 13.485 skills linked to these occupations, translated into 27 languages (all official EU languages plus Icelandic, Norwegian and Arabic). Over time, it will also display the qualifications awarded in the education and training systems from Member States, as well as qualifications issued by private awarding bodies.

Aiming to support job mobility across Europe and, therefore, a more integrated and efficient labour market, ESCO offers a common language on occupations and skills that can be used by different stakeholders on employment and education and training topics. Those concepts and the relationships between them can be understood by electronic systems, which allows different online platforms to use ESCO for services like matching jobseekers to jobs on the basis of their skills, suggesting trainings to people who want to reskill or upskill, etc.

Regarding the implementation of SmartWork's digiTeam service, the idea is to build an add-on for Trello based on ESCO ontology, used as a formal way to describe the professional categories' work tasks, considering the inherent worker knowledge and skills, in order to allow team pairing and system optimization activities.

4.5. Privacy and Security

There are widely acknowledged concerns around standards for privacy and security issues related to health-related standards towards elderly people, working environment and occupational conditions. This subsection introduces organisations that are addressing privacy and security challenges but should not be considered as a comprehensive list. An initial analysis has been provided within the context of deliverable D1.2- First version of Ethics and Safety Manual. Protection of privacy, security, health and safety of users, since the healthcare orientation of the SmartWorks dictates the strictest requirements. The European Directives and data protection standards (Opinion 2/2013 of the Article 29 Working Party of 27 February 2013 on apps on smart devices, etc.) as well as the U.S. HIPAA will

³⁸ <https://ec.europa.eu/esco/portal/home>

be the main references in this direction. The aim would be to focus upon the issue of standards gaps and the effective use of existing standards.

Active and Healthy Ageing is a horizontal issue. It needs standards from many different fields, from healthcare and care patient/user centered services to ICT products and services supporting those services; from accessibility and usability to medical terminologies and assessments. It also takes advantage of documents produced by many different organizations:

- the European Standardization Organizations (ESOs): CEN, CENELEC and ETSI.
- the International Standardization Organizations: ISO, IEC and ITU.
- The Standard Developing Organizations (SDOs), such as HL7, GS1, IHE, CDISC, DICOM and IHTSDO, coordinated within the Joint Initiative Council (JIC) on SDO Global Informatics Standardization (CEN/TC 251 and ISO/TC 215 are also members of JIC).
- Other relevant organizations, such as the Personal Connected Health Alliance.

4.5.1. Article 29 Data Protection Working Party

The working party was set up under Article 29 of Directive 95/46/EC. It is an independent advisory body on data protection and privacy³⁹. It is entitled to examine questions such as:

- To uniform application of the national measures adopted,
- To provide the Commission opinions on the level of protection in the Community and in third countries,
- To advise the Commission on possible legislation amendments, on any additional or specific measures to safeguard the rights and freedoms of natural persons with regard to the processing of personal data and on any other proposed Community measures affecting such rights and freedoms (article 30).

In Opinion 02/2013 on Apps on Smart Devices the working party clarifies the legal framework applicable to the processing of personal data in the development, distribution and usage of apps on smart devices. It analyses the key data protection risks, provides a description of different parties involved and highlights their legal responsibilities. The opinion notes that whilst app developers wish to provide new and innovative services, the apps may have significant risks to the private life and reputation of users of smart devices if they do not comply with EU data protection law. In addition, apps must provide sufficient information about what data they are processing before it takes place in order to obtain meaningful consent and the opinion further notes that poor security is another risk

³⁹ http://ec.europa.eu/justice/data-protection/article-29/index_en.htm

which could lead to unauthorised processing of personal data which increases the possibility of a data breach.

4.5.2. Health Insurance Portability and Accountability Act (U.S. HIPAA⁴⁰)

Health care providers and health insurance companies are generally aware that when protected health information ("PHI") is disclosed to a vendor, such as an attorney, consultant or cloud data storage firm, a business associate agreement is necessary to comply with HIPAA and to safeguard the information disclosed. HIPAA defines information security policy in the section "Assigned Security Responsibility". **This high-level standard handle only medical information and does not handle general critical infrastructure and other health services.**

4.6. Regulatory and Standardization needs and suggestions

This section will be further elaborated during years 2 and 3 of the project, aiming at providing possible conclusions on the gap analysis performed in the previous sections, summarizing pros and cons and identifying needs for standards, regulations, etc. in the area of work inclusion for the older workers, etc.

Identifying inadequacies of existing standards that could apply for solutions developed in the project and suggest new standards or amendments are also possible outcomes envisaged in the reports to come.

5. Concertation Activities

5.1. Introduction

The second part of this deliverable addresses the **Concertation Activities** that the SmartWork project is planning, detailing the approach and methodology and providing an overview of the actions developed during its first year. These activities aimed at exploring the establishment of strong synergies with relevant projects, networks and joint research initiatives, either national, European or international, focused on facing the societal changes brought by the demographic transition and development of a silver economy around age-friendly goods and services. These concepts are closely related to the project, enabling scientific knowledge share, straightened collaboration and exchange of research results. Besides the purpose of disseminating and exploiting the outcomes of the SmartWork project through privileged channels, the ultimate objective of this engaging dialogue

⁴⁰ <https://www.hhs.gov/hipaa/index.html>

consists of a unified approach of clustered projects working within the same scope, to collectively maximize their individual outcomes (including prolonging its impacts after the funding period) and actual influence, as evidenced below.

5.2. Projects

Regarding concertation purposes, CDC and ECHA are the main organisations responsible for the establishment of links and synergies with relevant initiatives and projects related with improving the workability sustainability of older adults, in order to enable mutual collaboration and scientific knowledge exchange, either nationally or internationally. This section presents the main connections established between relevant projects to this aim.

5.2.1. European and International Projects

Ultimately, European and international projects can add important inputs and contributions to SmartWork's progress and main purposes accomplishment. In order to better understand those, research and contacts were made, with the purpose of reaching out to the most relevant initiatives in the field at current time.

5.2.1.1. *Projects Approved under the Same Call*

Six other projects were approved by the European Commission in the same call as SmartWork, all focused on workability sustainability for older people and therefore having obvious synergies with the SmartWork project:

- **WorkingAge⁴¹** - Smart Working environments for all Ages;
- **See Far⁴²** - Smart glasses for multifaceted visual loss mitigation and chronic disease prevention indicator for healthier, safer, and more productive workplace for ageing population;
- **CO-ADAPT⁴³** - Adaptive Environments and Conversational Agent Based approaches for Healthy Ageing and Work Ability;
- **BIONIC⁴⁴** - Personalised Body Sensor Networks with Built-In Intelligence for Real-Time Risk Assessment and Coaching of Ageing workers, in all types of working and living environments;

⁴¹ <https://www.workingage.eu/project/>

⁴² <https://www.see-far.eu/>

⁴³ <https://coadapt-project.eu/>

⁴⁴ <https://bionic-h2020.eu/>

- **Ageing@Work⁴⁵** - Smart, Personalized and Adaptive ICT Solutions for Active, Healthy and Productive Ageing with enhanced Workability;
- **sustAGE⁴⁶** - Smart environments for person-centered sustainable work and well-being.

SmartWork already has established links with two of these projects, as SmartWork partners are also consortium members of BIONIC (RRD) and Ageing@Work (UPAT).

Outreach activities to the six projects commenced in the later stages of Year 1. These began by finding project co-ordinators contact details and sending an introductory email to each one asking if they would be interested in establishing early stage connections with SmartWork, and potentially with other projects under the same call. It was presented as an opportunity for similar projects to keep in touch and identify any opportunities for knowledge exchange and collaboration.

All project coordinators responded positively, and a joint mailing list with key contacts from each of the seven projects was established, formulating now a channel for easy communication with each other.

The agreed next steps involve providing communications support among each project in terms of social media (following and sharing posts), sharing project announcements and showcasing the projects on other projects' websites. Towards this direction, Ageing@Work has already implemented this kind of action⁴⁷:

It is envisaged that these early outreach activities will help to build strong working relationships, leading to scientific knowledge exchange and opportunities for collaboration which can be beneficial for all projects. For the mid to long term, there are foreseen some joint collaborative activities, such as workshops. Ultimately the aim is that this cluster of projects will be collectively able to maximise the outcomes and impact of the projects beyond the end of the funding period.

5.2.1.2. *PROGRESSIVE Project⁴⁸*

Progressive Standards around ICT for Active and Healthy Ageing was a research project funded by the European Commission in the framework of the Horizon2020 Research and Innovation Programme. Its main purpose was to make a profound voice in changing mindsets when it comes to the ethics support of ICT-related standards for active and healthy ageing, especially as older people comprise nearly 1/5 of population.

⁴⁵ <https://ageingatwork-project.eu/>

⁴⁶ <https://www.sustage.eu/>

⁴⁷ <https://ageingatwork-project.eu/projects>

⁴⁸ <https://progressivestandards.org/>

Cáritas Coimbra participated as a speaker at the CEN-CENELEC STAIR-AHA (STAndards, Innovation and Research in Active and Healthy Ageing) Conference, which took place in Brussels on 31st January and marked the end of the PROGRESSIVE project. This event aimed to bring together innovators, researchers and standardizers to discuss and identify needs and opportunities in the specific area of standards for Active and Healthy Ageing. Willeke van Staalduinen, of the Innovation Department of Cáritas Coimbra, and one of the coordinators of the Thematic Network SHAFE, represented the organisation in the dissemination of the SmartWork project, in which she explained the objectives of designing and testing friendly work and life environments for workers over 55, enabling them to maintain an active participation in their professional life, despite eventual health conditions or ageing limitations, by considering their potential and particular needs. This presentation enabled both the PROGRESSIVE and the SmartWork projects' partners and stakeholders, as well as other conference participants, to form the link between the ethical issues and privacy settings concerning ICT-related standards and their possible application towards SmartWork services and purposes related to the promotion of the older office employees' workability sustainability in their specific professional context.



5.2.1.3. PAAL Project⁴⁹

Due to the crucial challenges regarding health and social care that developed countries are facing because of the demographic change and current economic context, innovation in technologies and services for Active and Assisted Living stands out as a promising solution to address these problems while profiting from the economic opportunities. Lifelogging (also known as quantified self or self-tracking) technologies, for instance, may enable and motivate individuals to pervasively capture data about them, their environment and the people with whom they interact, in order to receive a variety of services to increase their health, well-being and independence.

In this context, the PAAL project - **Privacy-Aware and Acceptable Lifelogging services for older and frail people**, funded under the framework of the transnational Joint Programming Initiative "More Years, Better Lives" has been conceived, with a manifold aim: to increase the awareness about the ethical, legal, social and privacy issues associated to lifelogging technologies; to propose privacy-aware lifelogging services for older people, evaluating their acceptability issues and barriers to familiarity with technology; and to develop specific applications referred to relevant use cases for older and frail people.

⁴⁹ <https://paal-project.eu/>

As in SmartWork, also the PAAL project developments are based on the process of acquisition and processing of physiological signals (e.g. heart rate, respiratory rate, body temperature), motion, location, performed activities, images seen, and sounds heard, that in turn allow the provision of a variety of cutting-edge services to increase peoples' health, wellbeing, and independence. Examples of these services include personalized healthcare, wellness monitoring (physical activity, dietary habits), support for people with memory impairments, social participation, support to formal and informal caregivers, predictive systems (decline in cognition, etc).

In this perspective, both projects acknowledge the existent gap between the advances in technical development of lifelogging technologies and the effective willingness to adopt such technologies. Additionally, it is also known that this lack of understanding compromises the adoption of these innovations by their targeted end-users, and consequently their social and economic impact. As recent technology is increasingly integrated in private spheres and captures highly sensitive personal data, these developments may cause concerns about privacy and loss of control, especially as it regards an aged and frail user group. By focusing on the multidisciplinary, multi-cultural, multi-societal, gender- and age-based analysis of the ethical, legal, privacy and data protection issues associated with lifelogging, PAAL project can contribute with important add on to the SmartWork project ethical approach.



Following an invitation addressed by the Coordinator, Carina Dantas and Flávia Rodrigues from CDC participated in the workshop that the PAAL project organised in the AAL Forum 2019, "Towards privacy-aware and acceptable lifelogging services for older and frail people.

This special session aimed at discussing all these issues and collecting the opinions from the different stakeholders participating in it about the motives and barriers that limit

users' acceptance and make difficult the deployment of lifelogging services for AAL. The proposers are closely collaborating to provide an intercultural pan-European acceptance cartography of lifelogging technologies and guidelines to design privacy-compliant life-logging solutions addressing the new GDPR obligations, which could be a reference for technology designers, policy makers and other stakeholders.

The session included short presentations by experts in AAL technologies, empirical modelling of acceptance, usability, and impact of lifelogging technologies; and policy and regulatory aspects, in particular related to privacy and data protection. These presentations were the starting point to open the discussions on these topics, after which the participants were divided into groups of 5-6 persons that included experts with background in technology, usability, acceptance; end-users; policy makers. Each group worked for 20 minutes independently discussing how to address the perceived barriers

to the use of lifelogging technologies. Then, a global discussion took the rest of the session and paved the way for potential future research and collaboration tasks.

PAAL and Smartwork will have further interactions, namely connecting CDC lead on the Ethical issues related to the project and PAAL guidelines and recommendations, that are developed in Joint Research Activities section.

5.2.1.4. *ASPIRE Project*⁵⁰

The ASPIRE project (**Active aging through Social Partnership and Industrial Relations Expertise in Europe**) aims at understanding the processes through which social partners develop, pilot and implement active ageing interventions (including collective agreements) and reorient away from a collusion toward early retirement. European social partners have developed programmes to support older workers delay retirement and ASPIRE's purpose is to understand how Industrial Relations (IR) systems can facilitate and/or inhibit such agreements. This project has the financial support of the European Commission, DG Employment, Social Affairs and Inclusion, budget heading VP/2016/004 (Grant agreement VS/2016/0379), Industrial Relations and Social Dialogue.

By approaching questions like "How are age and employment perceived in workplace contexts within different IR systems?"; "How do employers and trade unions respond to EU and national social activation policies in creating sustainable work opportunities for older workers?" and "How are the interests of older and younger workers negotiated and reconciled through workplace level mechanisms?" This project pursues the identification of effective negotiating strategies, which can later be shared and promoted through the use of educational and training resources and web-based tools. Policy implications for European Union and national governments and social partners will be developed and disseminated.

These mutual contributes between ASPIRE and SmartWork project are further detailed in section 5.5 under Joint Research Activities with the University of Newcastle.

5.2.1.5. *APCP Project*⁵¹

The purpose of the **Automated Personalization Computing Project** (APCP) is to improve outcomes for individuals with disabilities by increasing access to information and communication technologies (ICT) through automatic personalization of needed assistive technology (AT). Under the APCP, an information technology (IT) infrastructure would be created to allow users of ICT to store preferences in the cloud or other technology, which then would allow supported internet-capable devices they are using to automatically run their preferred AT solutions. This IT infrastructure will ultimately

⁵⁰ <http://www.adapt.it/aspire/>

⁵¹ <https://gpil.net/APCP>

provide better educational opportunities, ease transitions between school and the workforce, and improve productivity in the workplace.

In September 2015 the Technology Innovation Program of the Rehabilitation Services Administration, US Dept of Education awarded a consortium of academic, commercial and non-profit organizations a 20 Million dollar cooperative agreement to take the auto-personalization function of the Global Public Inclusive Infrastructure (GPII) from concept and proof-of-concept stage through to commercial quality implementation and to test it in 10 American Job Centers, a community college and a number of high schools.

Two large scale integration projects were funded by the European Commission to help explore and build proof-of-concept versions of key components of this infrastructure, Cloud4all and Prosperity4All. Parallel grants in Canada (Fluid/Floe) and in the United States (UIITA-RERC and PGA) provided funds to complement these efforts and to explore other components.

Based on this work the proof-of-concept was completed and the DeveloperSpace and ShoppingAid/Unified Listing went live in September of 2017. SmartWork partner Raising the Floor International is a member of this consortium of academic, commercial and non-profit organizations that takes the auto-personalization function of the Global Public Inclusive Infrastructure (GPII) from concept and proof-of-concept stage to commercial quality implementation and to test it in 10 American Job Centers, a community college and several high schools.

The GPII is an infrastructure being developed internationally by teams under the RtF-I lead, to facilitate work worldwide in order to address the accessibility barriers and make sure everyone can access and use the Internet and all its information and services. In SmartWork project, GPII will be used for auto-personalization of the computer work environment and will be extended to include adaptations required by evolving health conditions, that will be delivered automatically through the ubiWork Service.

5.2.2. National Projects and Initiatives

In a similar way, concertation activities allow to projects implemented even on a national level to broaden their horizons and spread their outcomes and good practices European wide, thus serving the purpose of dissolving borders regarding a greater knowledge share. In this perspective, and as a result of both desk research and dissemination activities, SmartWork consortium gathered the main national contributions to a greater outcome regarding older adults (aged over 55) workability and sustainability.

5.2.2.1. *Healthy Workplaces Award*⁵²

The Healthy Workplace Awards and Stamps is an annual initiative promoted since 2015 by the Portuguese Order of Psychologists (OPP), that aims to recognize and distinguish Portuguese organizations with outstanding and innovative contributions to safety, well-being and health (physical and psychological) at the workplace. As such, it rewards those who have indeed demonstrated the strongest commitment and participatory approach in managing psychosocial and occupational health risks in specific working contexts.

This initiative is a contribution of the OPP to the encouragement and dissemination of the best orientations and practices that are developed in Portugal regarding safety, health and occupational well-being and is part of the partnership with the EU-OSHA (European Agency for Safety and Health at Work) and ACT (Portuguese Authority for Working Conditions), supported by DGS (Directorate-General for Health), IEFP (Institute for Employment and Vocational Training), CEPOL (Business Association of Portugal), CCP (Confederation of Commerce and Services of Portugal), CIP (Business Confederation of Portugal), UGT (General Union of Workers), CAP (Confederation of Farmers of Portugal), CTP (Confederation of Portuguese Tourism), the High Patronage of the Hon. Minister of Health, and the High Patronage of the Hon. Minister of Solidarity, Employment and Social Security.

Within the framework of SmartWork, Caritas Coimbra pursued a closer collaboration with OPP which is currently ongoing, that allowed to share common interests and goals between both these initiatives, as well as to gather possible contributions towards a concerted action aimed at enriching the design and creation of friendly living and working spaces to all ages, with special regard to the older workers context. In November there was a face-to-face meeting with the national and regional directors of OPP to establish the basis of concertation activities, namely training sessions, joint articles and joint national events.

5.3. Networks

It is widely acknowledged that, through a straight interaction and collaboration (both bottom-up and top-down communication between members and even between umbrella organisations) the stakeholder networks have the ability and potential to influence existing and future policy and strategic guidelines, favouring fast spread dissemination, as the adoption of a common language and proceeding. This next section is dedicated to the links and synergies established within the most relevant ecosystems actively working towards AFE purposes.

⁵² https://www.ordemdopsicologos.pt/pt/p/locais_trabalho_saudaveis; <http://www.healthyworkplaces.pt/>

5.3.1. EU and International Networks

5.3.1.1. Caritas International Network

Besides its regional and national scopes, Cáritas is also active worldwide, potentially reaching millions of users. Caritas Europa⁵³ has 49 member organisations in 46 countries across the continent, including in all member states of the European Union and the vast majority of Council of Europe⁵⁴ member countries. In addition, Caritas Coimbra is part of the global Caritas International network that counts in 165 members around the world. Caritas network in Portugal includes 21 Diocesan Caritas and a national organisation that provides training, support and fosters the networking. The support letter written by Portuguese Caritas to SmartWork project, indicated their early interest in its potential and results, showing their availability for supporting the process.



Caritas Coimbra privileged connections to these European and international networks directly implicate not only the possibility to spread the project outcomes dissemination, but also to enlarge the SmartWork system's future implementation or even market possibilities. A direct concertation call to the Caritas network will be issued in

year 2 of the project, to select some relevant collaboration activities to be pursued during its development.

5.3.1.2. Stakeholders Network on Smart Healthy Age-Friendly Environments⁵⁵

Approved by European Commission (DG SANTE; DG CNECT) in 2018 as one of the Thematic Networks powered by the EU Health Policy Platform, EN SHAFE brought together around 170 partner organizations in Europe (where ECHA, CAT and SPARKS are also included), within the efforts to accomplish Smart Healthy Age-Friendly Environments for all ages. In the role of Coordinator of this Network (together with AFEdeMy), CDC delivered, in November 2018, a Joint Statement on SHAFE⁵⁶ subject to the European Commission and Member States.

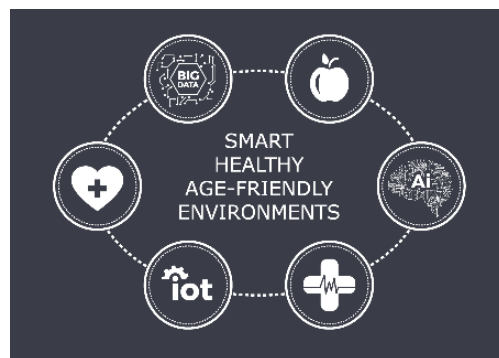
⁵³ <https://www.caritas.eu>

⁵⁴ <https://www.coe.int> › COE en bref

⁵⁵ <https://en.caritascoimbra.pt/shafe/>

⁵⁶ https://en.caritascoimbra.pt/wp-content/uploads/sites/3/2018/12/Joint-Statement_SHAFE_20181203.pdf

Currently, Caritas Coimbra is working on a White Paper to deliver in 2020, having discussed its main focal points in a workshop organised during AAL Forum2019, in September 2019, with more than 120 participants - Smart Healthy Age Friendly Environments and the Blueprint for digital transformation of Health and Care. Considering the importance of including the end users perspective and feedback in the design of new ICT solutions to be applied in working contexts, the intention is to exchange as many inputs as possible between both initiatives, namely the SmartWork project's main outcomes regarding SHAFE purposes within workability sustainability scope, based on its empiric outcomes.



5.3.1.3. *European Innovation Partnership on Active and Healthy Ageing*⁵⁷

The European Innovation Partnership in Active and Healthy Ageing (EIP on AHA) is an initiative launched by the European Commission, in 2011, to foster innovation and digital transformation in the field of active and healthy ageing. The concept of a European Innovation Partnership (an EIP) assumes that it can help strengthen EU research and innovation, focusing on the active and healthy ageing of the European people. This partnership brings together all the relevant actors at EU, national and regional levels across different policy areas to handle a specific societal challenge and involve all the innovation chain levels.

Cáritas Coimbra is represented on European Innovation Partnership on Active and Healthy Ageing (EIP-AHA) by a Main Coordinator (Carina Dantas) in D4 Action Group – Age-friendly Buildings, Cities and Environments. This Action Group gathers more than 200 members (regional and local authorities, NGOs, academia, research centres and companies) from different countries across European Union (where CAT/Aarhus Municipality is also represented), committed to the implementation of strategies to create conducive environments to active and healthy ageing, representing a very broad and active network for dissemination and concertation purposes.

⁵⁷ https://ec.europa.eu/eip/ageing/home_en

In this context, on May 9th and 10th, CDC co-organised and attended the meeting of the D4 Action Group of the European Innovation Partnership for Active and Healthy Ageing (EIP-AHA) at the LifeScience Park in Krakow (Poland), and could secure a slot in the agenda for presenting the SmartWork project and its aim of developing and validating innovative digital solutions able to help workers over 55 in renewing their working skills and adopting healthier lifestyles. This would allow them to stay actively involved in working life for longer, considering any age-related health conditions, with this concern being certainly shared by many other different organizations and countries.



Within the scope of the EIP-AHA, Action Group D4 released a Renovated Action Plan for 2020 where the SmartWork main scope is already addressed, as a main goal - General objective 2: To keep older people fully involved in society, notably as citizens, volunteers, carers, workers and entrepreneur and to continue to find the best innovations to market that suits later life and economy: employment and Silver Economy. This objective is operationalised in different specific goals, and SO 1.4. is directly connected to SmartWork: "To design, develop, implement and test more

ageing worker-friendly living and working environments" and it was introduced to the plan already envisioning this connection.

5.3.1.4. *EIT Health*⁵⁸

The European Institute for Innovation and Technology (EIT) is an independent EU body set up in 2008 to promote innovation and entrepreneurship across Europe. EIT Health Think Tank is a forum dedicated to the future of health innovation in Europe, with the participation of various experts and opinion leaders in the field. Considering the fast evolution in the field of medical and healthcare technology products over the last years, bringing a new approach to health and wellness practices. Therefore, EIT Health dedicated the Think Tank 2019 to "Optimising Innovation Pathways: Future Proofing for Success", seeking to provide recommendations that will remove barriers and accelerate the process of delivering innovation to citizens in various European regions.

⁵⁸ <https://www.eithealth.eu/>

Cáritas Coimbra, represented by Carina Dantas, attended the EIT Health Think Tank 2019⁵⁹, on September 19th, in Sintra at Glintt – Global Intelligent Technologies, where the challenge of *Optimising Innovation Pathways: Future Proofing for Success* was discussed as a part of a global event that, over several sessions across Europe, brought together the perspectives of different countries. The conclusions of these discussions will be described in a final report, which will contain recommendations for Optimizing Pathways for Innovation in the European Union, resulting in a European Commission White Paper, to which Caritas Coimbra actively contributed, and many SmartWork main concerns and purposes were brought to the table. Portugal hosted the second Round Table, where it was possible to know the current state of the path of health innovation in the country, discuss the changes needed for an optimized or ideal path for the future and, in the end, propose pragmatic recommendations.



5.3.1.5. Active Assisted Living (AAL) Programme⁶⁰

The **Active and Assisted Living** is a funding Programme that aims to create better quality of life for older people and to strengthen industrial opportunities in the field of healthy ageing technology and innovation. It organises the Active and Assisted Living (AAL) Forum, an annual conference that presents the latest technological advances for active and healthy ageing, from robots and games to applications and sensors, products that focus on quality of life, greater independence and social life, and reduction of health care costs and social support. It brings together on one occasion participants who develop the technology, those who use it and those who invest in it, making it one of the largest and most important European events in the area.

⁵⁹ <https://www.europarl.europa.eu/thinktank/en/home.html>

⁶⁰ <http://www.aal-europe.eu/about/>



This year, the AAL Forum 2019 took place on September 25th, in Aarhus, Denmark, co-organised by the Aarhus Municipality, including CAT (member of SmartWork). Caritas Coimbra was a member of the Organizing Committee, also participating as a speaker in interactive workshops and as a partner in ongoing project meetings and the Lean Academy.

In one of these initiatives, Caritas Coimbra chaired a workshop on "Ethics, data and privacy protection: who will take responsibility and how we proceed to a common framework for IT-AHA in Europe?". This workshop went under the framework of new ICT solutions that aim to take care of older people, sometimes fragile and most of the time not tech-savvy, making use of people's data to improve the technology in

general and, on a personal level, to keep an eye on the users' wellbeing. CAT was also a part of the table moderators in this discussion. In addition to previous experience in coordinating work related to ethics and deontology on issues associated to the introduction of robotics and ICT in daily life and data security and privacy, Caritas Coimbra is also currently active in raising user's awareness, to turn them able to make 'safe' choices themselves, as also in reflecting on the ethical framework towards policy making at a European level. Namely within SmartWork, an article has been produced that provides insights on ethical issues arising from the use of new technologies by older people in the work environment.



5.3.1.6. *European Covenant on Demographic Change*⁶¹

The European Covenant on Demographic Change is an organisation that joins more than 160 local, regional and national stakeholders, among public authorities, civil society organisations and businesses, coming from 26 countries, that works in close cooperation with the WHO Network of Age-Friendly Cities and Communities, within the commitment to cooperate and implement evidence-

⁶¹ <https://www.age-platform.eu/publications/covenant-demographic-change>

based solutions to support active and healthy ageing, based on the World Health Organisation comprehensive approach to Europe's demographic challenge.

In early 2016 the European Covenant on Demographic Change was legally established as an international non-for-profit network. After lots of negotiation efforts, the Covenant's application was accepted by WHO and it is now one of the eleven Affiliate Programmes officially registered with WHO Global Network, at the end of 2017. Since then, the Covenant has built strong synergies with WHO Global Network of Age-Friendly Cities and Communities, opening up opportunities for Covenant Full members to build links with age-friendly actors in other regions of the world and to share their experience globally. The synergies with WHO Global Network also contribute to expand the debate around the EU Silver Economy to other regions of the world.

As a founding member Cáritas Coimbra has been represented in this Covenant since 2016. CDC holds the Vice Presidency of Ordinary Members (2016-2011), through Carina Dantas. Within this context, the Covenant was invited and accepted the challenge to be a Main Partner of one of the 3 Thematic Networks approved by the European



Commission – DG SANTE for 2018, on the subject of SHAFE, led by Caritas Coimbra and AFEdemy. Many Covenant members also participate of one or several other EIP on AHA Action Groups or reference sites. This reinforces the synergies between the Covenant and the EIP on AHA and enables the Covenant to influence the debate in other EIP on AHA Action Groups on the EU emerging Silver Economy. It also enabled more local and regional actors to be involved because all interested stakeholders are welcome, be they front runners in the field of active and healthy ageing or simply interested in getting started and looking for help on how to assess the needs of their older population and how to develop an action plan.

One of the areas of interest for the Covenant is connected to the Silver Economy and employment and therefore potential concertation activities will be further pursued during the next 2 years of the SmartWork project.

5.3.1.7. AGE Platform Europe⁶²

AGE Platform Europe is a European network of non-profit organizations for people aged 50+, which aims to voice up and promote the interests of the 200 million citizens aged 50+ in the European Union (Eurostat, 2018) and to raise awareness on the issues that concern them most. Their work focuses on a wide range of policy areas that impact on older and retired people, including issues of anti-discrimination, employment of older workers and active ageing, social protection, pension reforms, social inclusion, health, elder abuse, intergenerational solidarity, research, accessibility of public transport and of the build environment, and new technologies (ICT).

This network mainly seeks to:

Give voice to older and retired people in the EU policy debates, through the active participation of their representative organizations at EU, national, regional and local levels; provide a European platform for the exchange of experience and best practices; inform older people on their rights as EU citizen or resident and on EU policy making processes and recent developments; promote older people's participation in the development of projects and devices intended for them (user engagement).



AGE Platform Europe organized their Annual Conference 2018⁶³ under the subject "Supporting older persons right to self-determination" and their workshop on improving working conditions in the long-term care sector.



Acknowledging that "inequalities start with the ageist stereotypes and age discrimination that are ingrained in our society, undermining people's enjoyment of their human rights as they age", as stated by AGE President, CDC already made connections to AGE Platform Europe in order to introduce SmartWork purposes and potential towards the implementation of the mentioned objectives, through concrete concerted actions.

⁶² <https://www.age-platform.eu/about-age>

⁶³ <http://www.age-platform.eu/special-briefing/supporting-older-persons%E2%80%99-right-self-determination-age-annual-conference-2018>

5.3.1.8. *The Digital Health Society*⁶⁴

The Digital Health Society (DHS) is a movement launched by the Ministry of Social Affairs of Estonia and the ECHalliance, in 2017. By bringing together all stakeholders of the digital health ecosystem around the table, it aims to develop a series of support activities and research and innovation projects, driving to collect the relevant data (for health purposes) of 100 million European citizens, by 2027, and make them available (under conditions) for specific purposes, e.g. research.



ECHalliance has been using the DHS network and social networks to share SmartWork project information with the DHS audience and signpost them to the SmartWork project website. Looking ahead, DHS Task Force 1 has a specific focus on Interoperability and Standards, and there are plans in development for a Webinar that will focus on 'Intelligent Working and Living Environments'. This will feature input from key players and contributors in this market sector, and it presents an excellent

opportunity for the SmartWork project to collaborate with stakeholders from the wider sector, whilst also presenting its workplace offering for employers, older workers and carers.

5.3.1.9. *The Digital Skill and Jobs Coalition*⁶⁵

The **Digital Skills and Jobs Coalition** brings together Member States, business companies, social partners, non-profit organisations and education providers, in an effort to take action in tackling the lack of digital skills in Europe, that are becoming essential in today's digital society and economy. Its main purpose involves addressing the digital skills needs of four major groups:

Digital skills for all - developing digital skills to enable all citizens to be active in our digital society;

Digital skills for the workforce - developing digital skills for the digital economy (e.g., upgrading and retraining of jobseekers; counselling and career guidance actions;

Digital skills for ICT professionals - Developing high-level digital skills for ICT professionals in all industry sectors;

Digital skills in education - turning digital skills teaching and learning into a lifelong learning perspective.

⁶⁴ <https://thedigitalhealthsociety.com/>

⁶⁵ <https://ec.europa.eu/digital-single-market/en/digital-skills-jobs-coalition>

To promote digital skills across Europe, the Digital Skills and Jobs Coalition identifies model projects that could be an inspiration for other similar initiatives. With the contribution of the Digital Champions, the European Commission has also identified relevant great projects that could be supported by the European Social Fund. By sharing information on many good practices across Europe, upscaling what is working well in one country to eventually replicate it in others, through adapting it to the specific local needs and demands, this initiative promotes the digital skills necessary to create a digital Europe.



CDC is a member of this group, through a declared commitment to support the objectives and principles of the Charter for Cooperation on Digital Skills and Jobs, and an agreement to contribute to boosting the high demanded digital skills in Europe. This way, CDC intends to articulate this initiative with the SmartWork project, namely to support the upskilling and retraining of the workforce and, in particular, to take concrete measures to support small and medium enterprises (SMEs) facing specific challenges in attracting and retaining digital talent, as also to carry out awareness-raising about the importance of digital skills for employability, competitiveness and societal participation.

5.3.1.10. CORAL Network⁶⁶

The CORAL network - Community of Regions for Assisted Living gathers 40 European regions - contributes and gives input, from a regional perspective, to the agenda of the European Commission, among others, through the participation in the action groups of the EIP AHA, events, projects, consultations and other initiatives.

The community raises awareness of and activates stakeholders in the regional networks and innovation clusters on Active and Healthy Ageing. Coral mobilizes other regions in Europe to connect and participate in the process of innovation and upscaling of smart solutions for Active and Healthy Ageing. Being member, CAT has discussed SmartWork during meetings and will keep potential collaboration during further interactions.



⁶⁶ <http://www.coral-europe.eu/>

5.3.2. National Networks

5.3.2.1. Portuguese Network on Smart Healthy Age-Friendly Environments⁶⁷

The Portuguese Network on Smart, Healthy and Age-Friendly Environments brings together a wide range of Portuguese organizations (currently more than 70) committed to promoting a joint agenda for the implementation of Inclusive Environments for All Ages, with a particular focus on Health, Social Support, ICT and Building Environments. To do so the Portuguese Network on SHAFE enhances a quadruple helix participation, by actively promoting the collaboration between research/academia, public authorities, companies and civil society /citizens, with the aim of finding common solutions to national challenges in this theme.

The Portuguese Network on Smart, Healthy and Age-Friendly Environments already has a place in the EU Health Policy Platform⁶⁸. This is the first network with a national space spoken in non-English language, which is officially created on this platform of the European Commission.

This Network is boosted by a Working Group, being the Technical Coordination ensured by Cáritas Coimbra (Carina Dantas) and the Scientific Coordination by ESEnfC (João Apóstolo). It also has an Advisory Board⁶⁹ that brings together 9 national reference figures.



The next meeting of the Portuguese Network will be integrated in the largest national meeting dedicated to Entrepreneurship and Social

Innovation, Portugal Social Economy'19, which will take place on December 10th and 11th at FIL (Lisbon International Market), in Lisbon and will similarly serve the purpose of building the next steps for 2020. On behalf of SmartWork, CDC will add a specific objective on smart and inclusive working environments in the 2020 Action Plan of the Portuguese Network on Smart Healthy Age-Friendly Environments.

5.3.2.2. Reference site – Ageing@Coimbra⁷⁰

Aiming at reinforcing the Centro Region of Portugal's capacity to respond to demographic demands in the territory, Ageing@Coimbra emerged, in 2014, in the city of Coimbra, as a consortium strongly

67 <https://en.caritascoimbra.pt/project/rede-portuguesa-ambientes-saudaveis-inteligentes-e-amigaveis/>

68 <https://webgate.ec.europa.eu/hpf/>

69 <https://caritascoimbra.pt/rede-portuguesa/sobre-a-rede/>

70 www.ageingcoimbra.pt/en/

driven by the quadruple helix approach, supported by an ecosystem of organizations related with health and innovation, with the ambition to create a reference site on AHA – Active and Healthy Ageing. In 2019, and following an informal cooperation during these years, a consortium agreement was signed between 7 core members – UC (University of Coimbra), ARSC (Centro Regional Health Administration), CHUC (Hospital Centre of the University of Coimbra), CMC (Municipality of Coimbra) and IPN (Pedro Nunes Institute), CCDR-C (Regional Authority), Cáritas Coimbra and ESEnfC (Nursing School of Coimbra). These organisations are the main players of the regional AHA ecosystem and the main intent consisted in straightening the communication and collaboration between them, towards SHAPE regional purposes achievement.

Ageing@Coimbra is a now stable self-regulated consortium that works based on a set of principles shared by all members. It is OPEN to regional members with successful practices and able to create positive regional impact on Active and Healthy Ageing; HOLISTIC because accepts an ageing concept without thematic barriers and in a humanistic perspective; and works as a PARTNERSHIP, where members share a common goal and strategies, respecting each organisation's individuality, promoting cooperation work and making several types of resources available to pursuit its goals, with mutual benefits to create positive impact and added-value.

However, it is no longer informal, since last July key stakeholders have signed a Consortium Agreement, consolidating a formal/legal structure for the network, operationally embedded in a perfect alignment with the quadruple helix: universities, regional authorities, business incubation/companies, civil society. Members strongly believe in their partnership and intend to ensure its sustainability, by creating an organisation with professional dedicated staff able to perform the planning, management and monitoring of activities, and to continue developing ongoing and future projects.



Presently, the consortium is composed by 84 members, with a clear regional coverage and involving a diverse and complementary network of organisations, from public regional and local organisms, to civil society organisations and companies, that together form a consolidated ecosystem that mix AHA health, knowledge, public entities, citizenship and innovation. In this framework, Ageing@Coimbra aims to concentrate excellence and avoid dispersion of scientific resources and to consolidate AHA ecosystem as a regional development pillar.

The SmartWork project will benefit from this diversity of partners to connect with different communities of older people living in different environments (e.g. urban vs low-density rural territories) as well as populations with high-level of education and social inclusion versus low literacy and at risk of social exclusion.

5.3.2.3. Reference site – Central Denmark Region⁷¹

Denmark is ranked as the most digital society in Europe by the Digital Economy and Society Index, 2018. However, 2019 was the first time Central Denmark Region tried to become a reference site. This has been done in close collaboration with Aarhus Municipality, a forerunner in digital and innovative solutions in this area – also internationally. The region is now labelled as a reference site with four out of four possible stars, which is an acknowledgement of strong regional partnerships across hospitals, municipalities, education and knowledge institutions, companies and citizens. The Region knows how to collaborate across sectors and institutions, and the investment of different organisations and municipalities.

The Municipality of Aarhus has invested heavily when it comes to applying new technology, and actively participates in the development, refinement and practical testing of new technological and innovative solutions. The digital age has already transformed the health system in Aarhus. The ultimate goal of Aarhus Municipality is to empower senior citizens to be independent of their services. The Department of Health and Care is dedicated to rethinking ICT solutions in European public-private partnerships to address the pressing issues of Europe's demographic development, where life expectancy is rising while workforce is decreasing.

For the first time, the 2019 EIP on AHA Conference of Partners was jointly organised with the AAL Forum on the 23-25 September 2019 in Aarhus, Denmark. As part of their joint mission to support ageing and care in digital transformation, the two organisations teamed up to bring together all the doers and shapers on active and healthy ageing from Europe and beyond.

The Danish city of Aarhus hosted the event, which included an action-packed agenda, with 32 parallel sessions, three plenaries, internationally renowned keynote speakers, and an exciting exhibition area where the latest designs and technology for the Silver Economy was showcased. Smartwork was featured in the event, with a booth hosted by the ECHAlliance and multiple references from many of its partners.



⁷¹ <https://www.rm.dk/regional-udvikling/rd-news-in-english/central-denmark-region-is-awarded-european-stars/>

5.3.2.4. *Danish National Network Welfare Tech*⁷²

CAT is a member of the Danish national network Welfare Tech, with members from both companies, public authorities, universities and experts. This consortium is formed by 202 members. Welfare Tech Innovation Network for Health and Welfare Technology brings together leading Danish skills in the field of health and welfare technology in a national network empowering development, commercialization and exports of Danish health and welfare technology.

The purpose of the Network is to increase commercialisation and export of Danish products and services related to health and welfare by ensuring Danish companies access to knowledge and skills from Danish research, education and knowledge institutions. These include municipalities, hospitals and academia.

The Innovation Network for Health and Welfare Technology is based on the growing demand for technology and services capable of helping citizens with health and welfare needs to have the greatest possible independence. Among the target are patients discharged from the hospital with a need for continued supervision of their health, or in need of rehabilitation and special care after a period of illness or decreased mobility.

Primary demand is from hospitals and municipalities, but the network also works with solutions marketed for private citizens. This entails the development and application of solutions for treatment and cares, which improve work capability, brings efficient use of resources and not least increases the quality of life for the individual citizen. Cooperation, knowledge-sharing and networking are our principal methods. Activities in the network enhance companies' possibilities to develop and market solutions based on the latest knowledge; and which have an inherent international appeal and export potential. Therefore, the network also collects and disseminates the latest knowledge about standards and regulatory demands, to enhance market penetration across jurisdictions and cultures.

In this context, SmartWork will be presented and discussed, intending to produce a related article later to be published in their Newsletter.

⁷² <https://en.welfaretech.dk/projects/welfare-tech-innovation-network-for-health-and-welfare-technology>

5.4. Events

5.4.1.1. *The CRISH Course*

The CRISH course was developed under the EIT Health CRISH project⁷³ (Co-Creating Innovative Solutions for Healthcare 2.0) in an international partnership between University of Coimbra, University of Navarre, Ruprecht-Karls-University Heidelberg, Imperial College London, University of Barcelona, Barcelona Institute for Global Health (ISGlobal), Clinical Hospital of Barcelona, Université Grenoble Alpes, Uppsala University, Agency for Health Quality and Assessment of Catalonia (AQuAS), Medical University of Lodz and Institute for AIDS Research (IrsiCaixa). It took place on October 3rd and 4th at the Faculty of Medicine of the University of Coimbra.



This course was designed for health professionals, patients, formal and informal caregivers, researchers, and entrepreneurs to identify health needs and challenges, towards the design of innovative responsive solutions.

Cáritas Coimbra participated as a speaker and motivator, on the first day of the event, to share some of the work developed and to present some projects. Carina Dantas, Innovation Department Director from Cáritas Coimbra, introduced the theme "Social and Community Innovation" in the interactive session dedicated to practical examples of co-creating innovative health solutions developed in the regional ecosystem. In this context, the strategic focus of the organisation in the use of new technologies to develop national and international projects that promote a more active and healthy ageing was presented. As an innovative digital solution system for older workers to remain actively involved in their working life, SmartWork was one of the practical examples of co-creation referred, thus opening the door for a fruitful discussion about friendly communities, empathic design and collaborative design in response to the identified health challenges and needs.

5.4.1.2. *1st International Congress on Ageing Communities*⁷⁴

Cáritas Coimbra participated as a speaker at the 1st International Congress Ageing Communities – Development Challenges, in 3 sessions. The event of international dimension took place between 14th

⁷³ <https://www.eithealth.eu/campus/training-for-executives-professionals/co-creating-innovative-solutions-for-health-crish->

⁷⁴ https://congress.agecomm.pt/en_US/

and 16th November, in Castelo Branco (Portugal), being promoted by the Interdisciplinary Research Unit – Aged Functional Communities (Age.Comm), of the Polytechnic Institute of Castelo Branco.

The continuing increase on population ageing levels challenges a review of current and future needs and expectations of this age group. Thus, this congress brought together researchers and professionals from diverse fields and backgrounds related to the development of the Ageing Communities, creating opportunities for a vision of societies that foster a successful ageing, through the interconnection of different factors, under the themes: Functional Communities, Human Development, Active Ageing and Participation and Innovation: Social, Political and Technological Aspects.



On the 16th, Carina Dantas, Cáritas Coimbra Innovation Department's Director, was one of the guest speakers at the Congress Closing Panel, discussing with the other speakers and audience the needs and horizons to address demographic challenges, and the economic factor was much discussed. The enhancement of working conditions as people age, senior entrepreneurship and the Silver Economy were big issues on the agenda to foster better solutions for the demographic challenges. This

was the departing point for many potential further collaborations of the project with several of the organisations present in the event.

5.4.1.3. Workshop *"Towards a More Inclusive Digital Future"*

On November 19th, Caritas Coimbra participated in the regional workshop *"Towards a more inclusive Digital Future: challenges and opportunities"*, promoted by the European Anti-Poverty Network - EAPN Portugal⁷⁵, which took place in Coimbra. The main objective of this initiative was to promote reflection and broad debate about the impact of digitization on the future of work, and to stimulate the articulation and production of contributions between different actors: public employment services technicians, professional integration offices (GIP); Qualification Centres and other vocational training centres; representatives of local businesses and entrepreneurial associations in the region; social economy organizations (SOE) and researchers. As a Social Economy Organization, Caritas Coimbra gave voice to good practices and concerns associated with the subject. The organisation already has a significant track record in technology-based projects and enhancement of older people or those in social exclusion. As a related example, the SmartWork project was presented and discussed in one of the Round Tables, involving the participation of more than 15 stakeholders.

⁷⁵ <https://www.eapn.pt/>

The ultimate aim was to promote healthier working environments for 55+ citizens and foresee a wide range of concertation activities with regional and national initiatives. Many leaflets of the project were distributed and there was the opportunity to explain in some detail the main aims and activities.

This event was part of a cycle of regional workshops, promoted by EAPN Portugal, with the purpose of gathering the plural perspective of the different actors and territories that will culminate in the elaboration of recommendations to be presented at a Conference on the theme, on December 10th.

The EAPN representatives already contacted CDC to propose further collaborations and will therefore be one of the stakeholders with whom new concertation activities will be explored for the next years.



5.5. Joint Research Activities

Confirming the benefits of sharing scientific knowledge, SmartWork dissemination activities have indeed created opportunities for connection and knowledge exchange between academic entities and researchers working within the same scope. The ultimate aim of these efforts is to provide scientific-based support for future recommendations to the European Union, to gradually achieve the policy integration of specific SHAFE purposes.

5.5.1. Jagiellonian University - Poland⁷⁶



As mentioned above, on May 9th and 10th, Cáritas Coimbra formally presented Smartwork at the meeting of the D4 Action Group of the EIP-AHA at the LifeScience Park in Krakow, Poland. From this event a contact with Jolanta Perek-Bialas emerged, a Polish researcher from

Jagiellonian University (in Krakow, Poland), interested in promoting some mutual cooperation within SmartWork, including the possibility to produce a Polish translation of the project's Questionnaire for Older Workers. Her main research interests focus on ageing, active ageing indicators, ageism in the labour market policy, social exclusion of older persons, care for older persons and reconciliation of work and care for older persons, leading her to participate not only in many national, international projects related to these topics, but also as an expert for various decision policy makers at the local,

⁷⁶ https://en.uj.edu.pl/en_GB/start

regional and national level in Poland, as for Organization for Economic Co-Operation and Development (OECD), European Commission, World Bank, UNECE.

Since then, Caritas Coimbra has been articulating with the Jagiellonian University in order to understand and define the possibilities of implementing a concerted activity within Smartwork scope, that could serve both the project's consortium and the University research purposes.

5.5.2. University of Alicante - Spain⁷⁷

Considering that Caritas Coimbra is leading requirements and validation in SmartWork (2019-2022) and also Chairing its Ethics Board, and following the D4 Action Group of the EIP-AHA meeting in Krakow where PAAL project (referred in previous sections) was presented, a Spanish researcher was invited to be part of Ethics Board as an external expert, by providing input and recommendations.

Francisco Florez-Revuelta is an Associate Professor at the Department of Computer Technology, University of Alicante (Spain), belonging to the Institute for Computer Research and the Domotics and Ambient Intelligence research group. Between 2011 and 2016, he worked at Kingston University London, where he led the Theme on Technologies for Active and Assisted Living in the Interdisciplinary Hub for the Study of Health and Age-related conditions (IhSHA). Dr Florez is currently also the coordinator of "PAAL - Privacy-Aware and Acceptable Lifelogging services for older and frail people," funded under the framework of the transnational Joint Programming Initiative "More Years, Better Lives".



Universitat d'Alacant
Universidad de Alicante

His research work is focused on ambient assisted living (AAL), particularly in the design and development of intelligent monitoring systems to support the activities of daily living of older and/or disabled people. His main interest is on the use of cameras to monitor people in private environments, and in the related ethic-legal issues. He is currently working in the de-identification of people being monitored in order to preserve their visual privacy, while maintaining the utility of the images to provide valuable AAL services.

As referred, the University of Alicante and CDC will be collaborating in Smartwork's ethical themes, being the joint collaboration on the AAL Forum workshops already a successful example of the concertation activities.

⁷⁷ <https://www.ua.es/en/>

5.5.3. Newcastle University – United Kingdom⁷⁸



After a professional contact through AGE Platform Europe, Chris Ball, researcher of the National Innovation Centre for Research on Ageing, from the Newcastle University in United Kingdom, had the opportunity to organise a face-to-face meeting in Brussels with Carina Dantas and Willeke Van Staalduinen, both on behalf of CDC, to know more about the SmartWork survey, released to gather the requirements of workers (aged over 55), employers and also carers, in relation to their workplace conditions, their disabilities or chronic diseases and other related matters. As an expert on all aspects of policy and practice regarding the ageing workforce, passionate about the value of older workers, management of an age diverse workforce, development of the silver economy and demographic change (including international dimensions on all these), he was particularly interested in finding opportunities to share a scientific article on the matter at some future point.

This contact resulted on a mutual collaboration proposal, with significant potential for employers and workers in the UK and many other countries, where there is a policy expectation in favour of extending working life along with workforce ageing and not necessarily any increase in healthy life expectancy commensurate with increases in life expectancy. Presently, Caritas Coimbra has already established further connection to the Newcastle University, pursuing the commitment to fulfil such a concerted plan.

5.5.4. University of Applied Sciences Europe - Germany⁷⁹

Birgitta Schueler, from the University of Applied Sciences Europe in Germany, also approached Caritas Coimbra showing interest in connecting to SmartWork development and results, in order to write a scientific standards questionnaire at the University, as also in using SmartWork's Questionnaires as part of a bigger survey for a methodical seminar project at the same university. This questionnaire should include SmartWork tools with demographic and general information on personal habits, health status, system functionalities and interface and wearables.



Her main research interests are focused on barrier-free systems (environment, friendly cities, mobility, travelling); universal design; accessibility and usability, and her main work has been spinning around transportation, housing, civic participation and employment, respect and social inclusion, communication and information, outdoor spaces and buildings.

⁷⁸ <https://www.ncl.ac.uk/>

⁷⁹ <https://www.ue-germany.com/>

At this point, Caritas Coimbra is running a process of negotiation and establishing the concertation possibilities with University of Applied Sciences Europe, within the SmartWork scope and purposes.



6. Conclusions

This report (D9.4) introduces the delivery documents that operationalize the **Standardization & Concertation Activities** task (T9.3), within Work Package 9 “Dissemination and Exploitation”, namely regarding the first year of the SmartWork project (M12), with two more (M24, M36) being required until the end of its lifecycle.

Considering the Communication and Dissemination Plan for Year 1 (D9.1), as also the Exploitation & Business purposes of the project, this deliverable provides an overview of SmartWork’s progress, through a detailed description of its most relevant achievements, in terms of the activities and initiatives that the project developed within this specific task, during the first 12 months of execution (from January 2019 to December 2019).

From a strategic point of view, and by intending on a clearer and understandable explanation, these were divided into (1) **Standardization Activities** related to active and healthy ageing in various fields, and (2) **Concertation Activities**, related to the establishment of links and synergies with relevant national and international projects, networks and joint initiatives. A similar methodology was followed in both cases, that consisted of searching and analysing the existent standards and relevant initiatives within SmartWork scope, articulating the project with them and thus integrating that outcome into new knowledge and contributions towards a unified approach to the challenges faced by office workers as they grow old, as their employers and carers, throughout the designing, implementing and validating an ICT-enabled framework of unobtrusive and ubiquitous ICT tools and services supporting age-friendly working and living environments.

Ultimately and consequently, besides the actual outcomes and state of the art, this document suggests a set of guidelines for continuing the initiated work in the next two years, based on the developments achieved and open to new possibilities, regarding the main standardization and concertation priorities and concerns.

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