



## H2HCare

Social robot-based solution for elders' Care management and coaching after discharge from Hospital to Home

### D5.1 Project Quality Control Plan



|                                  |  |
|----------------------------------|--|
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| <b>Deliverable Title:</b>        | Project Quality Control Plan   |
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|---------|----------------------------------|------------|---|
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| 0.5     | Ionut Anghel, Marcel Antal (TUC) | 22-05-2020 | Added project management structure and risk monitoring  |
| 0.7     | Ionut Anghel, Claudia Pop (TUC)  | 25-05-2020 | Added documentation and communication quality processes |
| 0.9     | Tudor Cioara, Ioan Salomie (TUC) | 27-05-2020 | First complete draft sent to peer-reviewers             |
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| 0.99    | Marcel Antal (TUC)               | 16-06-2020 | Quality checked version                                 |
| 1.0     | Tudor Cioara (TUC)               | 16-06-2020 | Final version ready for CMU                             |
| 1.1     | Ionut Anghel (TUC)               | 03-12-2021 | Edits for updating the management procedures            |
| 1.5     | Tudor Cioara (TUC)               | 20-12-2021 | Updates for different sections, consolidated risks      |



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## List of acronyms

| Acronym | Description                  |
|---------|------------------------------|
| AAL     | Ambient Assisted Living      |
| AB      | Advisory Board               |
| CA      | Consortium Agreement         |
| CB      | Consortium Body              |
| CMU     | Central Management Unit      |
| IPR     | Intellectual Property Rights |
| MTR     | Midterm review               |
| PDF     | Portable Document Format     |
| PM      | Project Manager              |
| QC      | Quality Check                |
| SC      | Steering Committee           |
| ToC     | Table of Contents            |
| WP      | Work Package                 |



## Executive summary

This report describes the updated version of the quality assurance and project management plan considering the feedback provided by our reviewers. It details the procedures and rules for quality assurance in project communication, collaboration, and deliverables, in accordance with the definitions and regulations of the Consortium Agreement (CA). The report also contains an updated risk and contingency plans considering the adjustments and actions to be implemented in response to the midterm review.

As an integral part of management planning, the quality assurance plan of a project provides a solid ground for effective, timely and quality implementation of project activities. Thus, this report defines and describes:

- the expectations and quality objectives;
- the roles and responsibilities for the project management and quality control process;
- project quality policies and standards and compliance criteria;
- identifying a set of procedures to ensure the desired quality levels.

The first version of the deliverable was approved by the consortium in the beginning of the project and was used for day-to-day management of the project and for quality control by all partners responsible for preparing and producing deliverables and project results. The second version will be the core quality guide for the second part of the project incorporating updates, changes, and improvements to the management plan together with the midterm review (MTR) feedback.



# 1 Introduction

The goal of this deliverable is to describe the methods and techniques that are used to promote efficiency and quality of work in the project and provide administrative and scientific coordination.

## 1.1 Intended Audience

The dissemination level of the present document is marked as public. The intended audience of this report is the H2HCare consortium and the AAL Central Management Unit (CMU) representatives tasked with reviewing the project and its progress towards meeting the specified milestones and raised awareness.

## 1.2 Relations to other activities

WP5 main objectives are to monitor the scientific and technical progress of the project and to establish an effective project management structure to plan, monitor and coordinate the project. This deliverable contains the control procedures to be used for work plan implementation and is a cross task deliverable, being related to all tasks of this Work Package (WP), namely “Task 5.1 - Project’s administration, reporting and resource monitoring”, “Task 5.2 - Project management and monitoring” and “Task 5.3 - Communication, collaboration and quality management”.

As illustrated in Figure 1 Pert diagram, WP5 is a vertical WP, its activities being active throughout the project lifetime and interacting basically with all other H2HCare WPs.

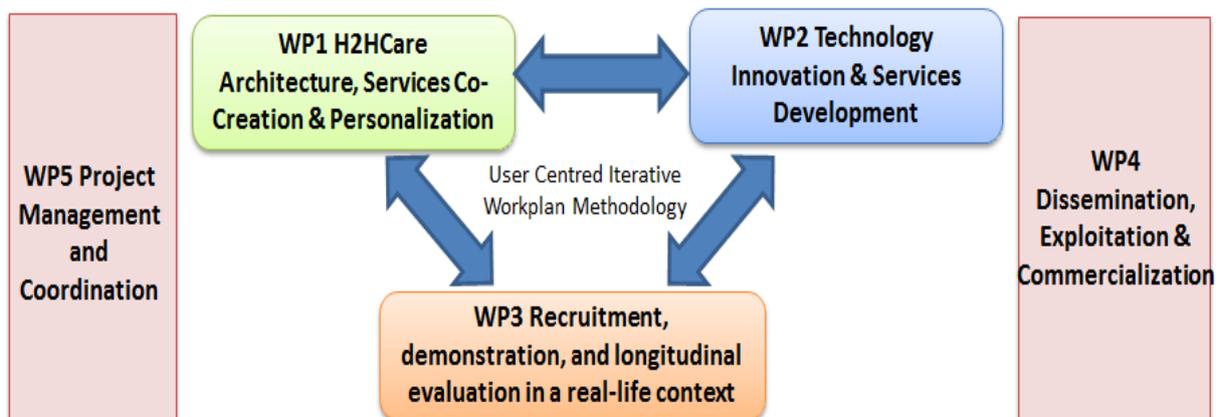


Figure 1: H2HCare project Pert diagram

## 1.3 Document overview

The remainder of the report is organized as follows:

- Section 2 presents an overview of the H2HCare project management structure;
- Section 3 shows the methods and techniques for H2HCare communication quality control;
- Section 4 presents the policies to be used for producing high quality documents;
- Section 5 shows the envisioned risk monitoring strategy;
- Section 6 concludes the deliverable.



## 2 Project management structure

In this section an overview of the H2HCare management structure is described highlighting the key roles in the structure and their responsibilities.

### 2.1 General structure

The project management structure defined in H2HCare includes three main major management areas:

- **The Coordinator** acts as the intermediary between the partners and the AAL CMU and is responsible for the project implementation, administrative and financial management.
- **The Technical Manager** is responsible for ensuring that the scientific and technical conduction of the work will follow the project work plan.
- **The Impact Manager** will lead the general dissemination, business development and exploitation actions of the project, to maximize the market uptake potentials for the project results.
- **The National (Local) Ethics Manager** will monitor and supervise the adoption of local / national ethics procedures in countries in which the pilots are run.

Figure 2 shows the H2HCare project management structure, more details about the specific roles are presented in the following sub-section.

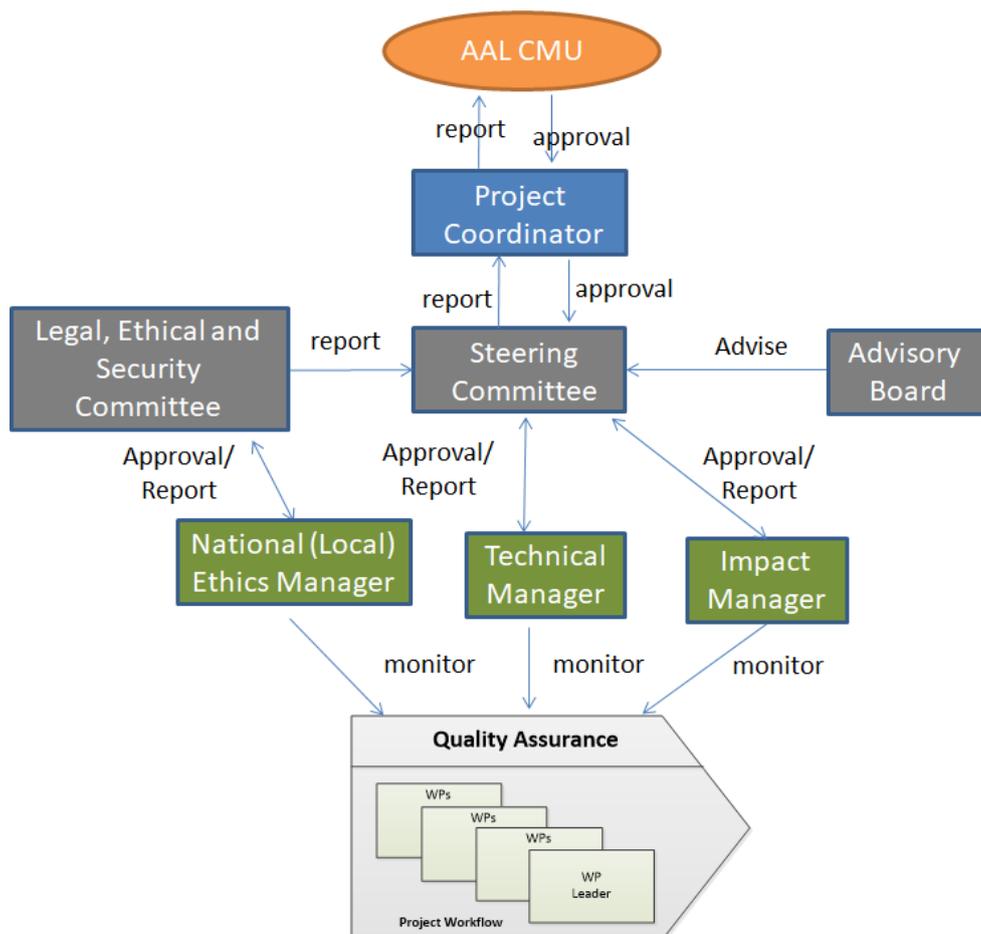


Figure 2: H2HCare project management structure.



## 2.2 Roles and responsibilities

The **Coordinator, Dr. Tudor Cioara from TUC**, is the intermediary between the partners and the AAL CMU. He is responsible for:

- Overall legal, contractual, ethical, financial and administrative management of the consortium.
- Monitoring compliance by the partners with their obligations and the implementation of corrective decisions.
- Collecting, reviewing to verify consistency and submitting reports and other deliverables (including financial statements and related certifications) to the AAL CMU; administering the community financial contribution and fulfilling the financial tasks described in Article 7.3 - General conditions of EU Grant contracts.
- Providing, upon request, the partners with official copies or originals of documents which are in the sole possession of the Coordinator when such copies or originals are necessary for the Parties to present claims.
- Preparing, updating and managing the CA between the partners.

The **Scientific and Technical Manager, Dr. Marcel Antal from TUC**, is responsible for ensuring that the conduction of the work will follow the plan. Main tasks are:

- Coordination of the overall technical and integration activities of the project.
- Ensuring the high technical quality of reports and deliverables submitted to the EU Commission.
- Consortium level coordination of knowledge management and innovation-related activities.
- Reporting and monitoring of the progress of work packages covering scientific and technical issues to the Steering Committee and the Coordinator; Ensure the integration of technical new and re-used technical solutions.

The **Impact Manager (Mr. Simon Oliver Ommundsen from NIS)** leads the general dissemination and exploitation actions of H2HCare, in order to maximize the exploitation potentials for project results. Specific tasks are:

- Meet regularly with representatives of each partner to define, coordinate and update a collaborative exploitation and dissemination plan. Keep track of conferences, magazines and journals for dissemination.
- Coordination of dissemination activities like a brochure or the project web site; IPR definition and data maintenance and harmonization of the partners' policies; coordination of effort to develop marketable products.
- Release of a business plan covering one or more preferred solutions concerning the partnership in the exploitation, the organization, the royalties, the market estimates and risks.
- Market analysis, key stakeholders and commercialization channels identification for successful market outcomes of project results. Planning of exploitation strategies and joint initiatives.

The **National (Local) Ethics Manager (Prof. Christian Lovis from HUG for Switzerland and Helge Klitzing from SN for Norway)** will monitor project ethics in the countries in which pilots will undergo making sure that the local regulations are respected. In particular, is responsible for:

- Supervising the process of applying for ethical approvals from national ethics boards and committees, according to each participating country's research ethical regime, appropriate and necessary for the project's topic.



- Supervising the process of making all necessary self-declarations and the like, in each participating country vis-à-vis national rules and regulations for data security arrangements and that of handling person (-al)/sensitive data, and privacy.

The **Steering Committee (SC)** includes members of the consortium according to their reputation and area of expertise and its main role is to audit all the scientific, technical and exploitation work conducted in the project (see Table 1). The SC is the supreme decision-making body of the consortium and can advise and decide on policy and strategy as well as to oversee the general management and direction of the project. The Scientific & Technical and Impact Managers will be part of the H2Hcare project SC. Specific activities of the SC are:

- Checking / ensuring that the progress of the work meets the project functional requirements. Supporting the Coordinator in preparing meetings with the AAL CMU and in preparing related data and deliverables.
- Monitoring the effective and efficient implementation of the project.
- Collecting information at least every 6 months on the progress of the project and examining it to assess the compliance with the consortium plan and, if necessary, proposing modifications.
- Preparing the content and timing of press releases and joint publications by the consortium or proposed by the AAL CMU in respect of the procedures of the EC-GA Article II 30.3.
- Deliberate, negotiate and decide on the following (using the voting rules established in the CA): approval of major changes in the work of the project, changes in the consortium, proposed changes to the CA, suspension or termination of all or part of the project or of the contract, actions to be taken in the case of misconduct of a partner.

Table 1: Steering committee members

| Partner             | Representative         | E-mail                               |
|---------------------|------------------------|--------------------------------------|
| Coordinator (chair) | Tudor Cioara           | tudor.cioara@cs.utcluj.ro            |
| TUC                 | Marcel Antal           | marcel.antal@cs.utcluj.ro            |
| TLU                 | Arnor Solberg          | arnor.solberg@tellu.no               |
| HUG                 | Alexandra Villaverde   | Alexandra.VillaverdeNaveira@hcuge.ch |
| SN                  | Helge Klitzing         | helgeklitzing@gmail.com              |
| NIS                 | Simon Oliver Ommundsen | ommundsen@noisolation.com            |

The **Advisory Board (AB)** is a board with a direct link to the H2Hcare management team and will consist of independent experts with very wide recognition in their respective fields, and with different backgrounds and areas of expertise, including accessibility research platforms and initiatives, elders’ associations and representatives, medical domain, AAL market and commercialization. The advisory board will be consulted at each critical step within the project, in technical aspects and in issues where commercial exploitation and standardization of the project results are addressed. The committee will remain actively involved during the life of the project, as a key holder between the project and end-users.

In the project DoW, we have envisioned an AB consisting of 8 independent experts with very wide recognition in their respective fields, and with different backgrounds and areas of expertise, including accessibility research platforms and initiatives (2 experts), elders’ associations representatives (2 experts), medical domain (2 experts), AAL market and commercialization (2 experts). Considering the feedback from the MTR, and the need to gather and incorporate in our innovation process the feedback and requirements of tertiary stakeholders we have defined a new structure for the AB is presented below:



- Older adults care associations representatives
  1. Pascal Piguet, Director of Operations IMAD (Institution Genoise de Maintien a Domicile), Geneve, Switzerland Pascal.Piguet@imad-ge.ch
- Hospital and insurance companies' representatives
  2. Professor Dr. Claudia Gherman, Manager of the Cluj-Napoca County Emergency Hospital which is the second largest in Romania
  3. Dr. Ovidiu Anchidin, Primary cardiologist and researcher, Heart Institute "Niculae Stancioiu", Cluj-Napoca, Romania, actively involved in the emergency care in heart related problems
  4. Dr. Kjell Arne Rein, medical doctor, specialist in general-, vascular- and cardiac surgery, PhD, Kardialogic AS, Haugesund, Norway
  5. Prof. Patrick Van Gelder, Faculty of Medicine and Health Sciences, Department of Rehabilitation Sciences, Funding manager, Ghent University, Belgium
- Business stakeholders (AAL market and commercialization)
  6. Vincent Jimenez, Director of Stackcare, Switzerland, expert in health robotics solutions
  7. Terje Grimstad, CEO, Karde AS, Oslo, Norway, AAL products commercialization expert, terje.grimstad@karde.no
- Technology experts
  8. Prof. Ciprian Dobre, AAL Senior researcher and vice-dean Faculty of Automatic Control and Computer Science, University Politehnica of Bucharest, Romania, ciprian.dobre@upb.ro

A **Legal, Ethical and Security Committee** will be comprised from all the National (Local) Ethics Managers and will work with the project Steering Committee to ensure that all EU level ethical are respected and to harmonize potential local (national) ethics related differences. The committee will: (1) define the project's daily ethical guidelines (Code of Conduct) to be followed by all researchers and practitioners participating in the project and (2) ensure that researchers' interactions with end-users are ethical and best practices ethical management has been applied.

**WP leaders** have been nominated as the main points of coordinating the work package level activities thought the project lifetime:

- WP1: Simon Oliver Ommundsen (NIS)
- WP2: Tudor Cioara (TUC)
- WP3: Jessica Rochat (HUG)
- WP4: Simon Oliver Ommundsen (NIS)
- WP5: Ionut Anghel (TUC)

## 2.3 Voting rules

As stipulated in the CA, each Consortium Body (CB) shall not deliberate and decide validly unless two-thirds (2/3) of its members are present or represented (quorum). Each member of a CB present or represented in the meeting shall have one vote. A Party which can show that its own work, time for performance, costs, liabilities, intellectual property rights or other legitimate interests would be severely affected by a decision of a Consortium Body may exercise a veto with respect to the corresponding decision or relevant part of the decision. Decisions shall be taken by a majority of two-thirds (2/3) of the votes.

## 2.4 Project meetings

The kick-off meeting, chaired by the Project Manager (PM), marked the actual launch of the project and aims to strengthen the sense of common purpose between all partners, identify responsibilities,



initiate cooperation between WPs, confirm/improve the work plan for the whole duration of the project. The PM illustrated what is expected from each partner in terms of results, performance, and reporting. The meeting was held online using virtual meeting tools due to COVID19 pandemic restrictions.

Different types of meetings can be arranged to check the progress of the project, to discuss technical issues or choices, to take strategic decisions, to apply changes to the consortium, etc.:

- **SC meetings** – held on yearly basis for liaison among the Parties in relation to the project, for analysing and approving the results, for proper administration of the project and for implementation of the provisions included in the CA;
- **AB Meetings** – physical or virtual meetings with the AB members to show the status of the project and gather feedback and advices for improving the development processes.
- **Legal, Ethical and Security Committee Meetings** – to monitor and discuss project related ethics in the countries in which pilots will undergo making sure that the local regulations are respected;
- **Plenary meetings** - twice a year, where all the work done will be presented, and future action points will be discussed mainly to track the status, progress and quality of all the H2HCare processes;
- **Informal Virtual Meetings** – discussing ongoing activities in the work plan every 2 weeks in order to keep all consortium partners up to date with ongoing project activities, and to make sure all partners are involved in the day-to-day collaborative project work;
- **Technical meetings** – organized at technical WP levels for clarifying the existing technology related activities and assuring that the work for H2HCare envisioned platform and services is on track;
- **Project review meetings** - physical review meetings with AAL CMU experts for evaluating the work done in the project. It is envisioned a half-project review meeting around month 18 (October 2021).

The chairperson of a meeting shall prepare and send each participant a meeting agenda no later than **15 calendar days** preceding the meeting. Also, the chairperson of a meeting shall produce written minutes of each meeting which shall be the formal record of all decisions taken or action points planned. The chairperson shall send the minutes to all participants within **10 calendar days** of the meeting. **Both agenda and minutes documents will follow the templates provided by the coordinator at the beginning of the project, available into the project web repository.**

Currently all project meetings were held online due to COVID19 restrictions totalling 35 bi-weekly meetings, 4 full day project plenary meetings, 2 technical meetings and 2 brainstorming meetings. If the pandemic will allow it, in 2022 the consortium plans to have their first face to face meeting.



### 3 Quality control for communication

This section describes the main tools and procedures that will be adopted in the H2HCare project to ensure clear, transparent, and efficient internal communication, e.g., the internal management website, the e-mail, audio/video conferencing.

#### 3.1 Web repository

The Google Drive-based internal management website is adopted inside the project mainly as:

- Central Document Repository;
- Cooperative working area;
- Project management tool.

It acts as the primary means of communication for the delivery and interchange of documents and media (see Figure 3). It is accessible at the URL by the consortium members:

<https://drive.google.com/drive/u/0/folders/1ThxBL50XqPOqPnJh1ku44MKXpvW5c1LG>

Each project partner is responsible to notify the coordinator about any changes of project participants in their organisation. Project partners can add additional folders to the repository where appropriate, even though the coordinator is in charge to give a structure to the repository and to periodically refine it. As a general principle, the documents must be uploaded to the internal website (in the right folder) and then notified by e-mail; this method is preferred to send them as attachments by e-mail.

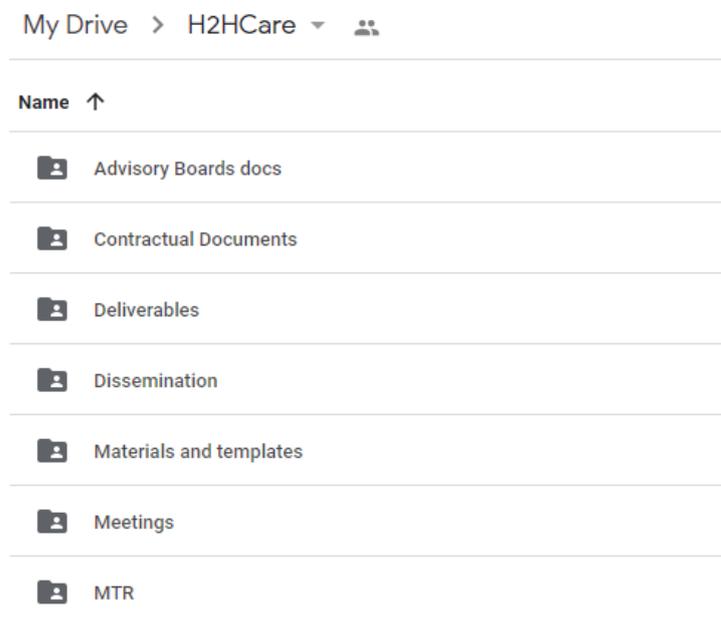


Figure 3: Project internal repository.

The H2HCare web repository will be used for the overall project management, especially in what concerns the day-by-day activities. The project coordinator, as well as the WP leaders, can monitor the advancement of each activity, can assign tasks to people involved in the project, can check if some delays occur in deliverable preparation and release, can take note of all the project deadlines, meetings, events in the calendar, and so on. For the H2HCare project, the opportunity to take advantage of other project management platforms will be evaluated.



### 3.2 Mailing group

Mailing lists are a major means of communication within the H2HCare project. They are preferred to list the addresses.

As a general policy, each person posting to any of the e-mail lists should ensure that the content of the message is appropriate for the recipients of the list selected, thus avoiding unintended and unnecessary e-mails.

The options of creating different internal e-mail lists for specific purposes (e.g., one for each WP) and adding an appropriate prefix automatically to the e-mail header to ensure they can easily be identified as e-mails of the specific list will be evaluated.

The project mailing list has been defined: [h2hcare@googlegroups.com](mailto:h2hcare@googlegroups.com) (all members)

### 3.3 Virtual meetings / web conferences

**Skype for Business and Teams** services for voice and video communications have been chosen as environment for periodic virtual meetings and for plenary meetings due to COVID19 pandemic. They are professional tools that allows audio, video interaction and complex screen sharing. If someone among the partners cannot attend a virtual conference (because of internal security policies, for instance), phone conferences can be arranged. The coordinator has created a 2-week virtual meeting link that will be used for virtual meetings in the project on a recurring basis.



## 4 Quality assurance for documentation

The aim of this chapter is to describe the documentation management procedure for the H2HCare project. It defines standard rules and procedures related to documentation production that all partners should apply throughout the project.

The documentation management procedure is applicable:

- to all partners;
- for all deliverable documents to the AAL CMU;
- for documents exchanged among partners.

It is recommended that documents internal to the Consortium follow these guidelines as well.

### 4.1 Tools for documentation editing

In order to improve workflow activity, it is recommended to use standardised tools. The following tools will be used:

- Word processing: Microsoft Word 2013+;
- Spreadsheet: Microsoft Excel 2013+;
- Slides presentation: Microsoft PowerPoint 2013+;
- Document for web publication: Portable Document Format (PDF).

### 4.2 Documents quality assurance

**A guiding template to be adopted for the MS Word reports has been defined and is available in the Materials and Templates subfolder of the H2HCare Web repository.** According to this template each document contains:

- a title page, with contractual info and the document identifier (from which the file name is derived);
- a presentation page, including, other document info, a document status sheet and change record table;
- index of contents;
- a glossary and list of acronyms if necessary;
- an executive summary;
- the main sections;
- the references, if any;
- annexes, if applicable;

The deliverable reports naming convention for H2HCare is:

**H2HCare.DX.Y.PPP.WPz.Vk.j.docx**

where:

- **DX.Y** is deliverable number according to the Grant Agreement;
- **PPP** is partner's abbreviation;
- **WPz** is the WP number;
- **Vk.j** is the version number, with V1.0 the one to be sent to the AAL CMU.

For example, document with title "H2HCare.D5.1.TUC.WP5.V1.0.docx" indicates Final version (v1.0) of the deliverable D5.1 which is delivered inside WP5 by partner TUC.



A document may exist in one of the following states:

- Table of Contents (ToC), V0.1, that is the structure of the document;
- Draft, V0.x, incomplete version of the deliverable (it strongly suggested to use v0.xy format, especially for non-major changes, such as internal reviews or small contributions);
- Consolidated V0.9, first complete draft to be submitted for peer-review;
- Reviewed, V0.9y, after peer-review;
- Release Candidate, V0.95, after that the author has applied corrections, suggestions and comments from peer reviewers;
- Quality Checked, V0.99, after applying the quality check from the quality checker;
- Final, V1.0, when the PM approved it and it is ready to be submitted to the AAL CMU.

The above status values appear on the document change history section. Optionally, V1.1 and following versions may be used for special further refinement.

In order to facilitate the Quality Check (QC), all members must adopt the following procedure for writing reports using MS Word:

- All members must use the template stored in the web repository;
- Set the MS Word language in “English UK”;
- Pay attention to text formatting (font, dimension, colour, indentation, line spacing, of titles, text, reference and captions) according to template;
- A list of acronyms used in the text must be reported. When an acronym is used for the first time, the extended name must be reported too. If the document is too long, the repetition of “extended name” is suggested at beginning of each section;
- Each figure and each table must have its key-caption;
- In order to add and to insert a reference into a text, the MS Word “*cross reference*” functionality in “*Captions tab*” must be used;
- Ensure that the links of external resources are still accessible before adding them in the text;
- After that document is complete, author must create the table of contents through “*Table of Contents*” functionality in “*References*” menu. If the table exists, the author must update it;
- The figures and texts in the document must be legible and must have a good resolution;
- Check over the Executive summary and Conclusions accuracy.

**Similarly, a template for PowerPoint presentations has been defined and is available in the web repository.** It must be adopted for each presentation within the project, as well as for external presentations (conferences, training, etc.) connected to the project.

### 4.3 Deliverable peer review process

Two peer reviews will be performed in parallel by the two reviewers from the consortium that will provide their comments or suggestions to the Deliverable responsible. The designated quality checker will be responsible for a final quality check. The coordinator has proposed and agreed with the consortium the peer reviewer assignment from Table 2.



Table 2: Deliverables details and assigned reviewers

| Del. n° | Deliverable name  | Responsible | Type of del. <sup>1</sup> | Diss. level <sup>2</sup> | Del. date | Reviewer 1 | Reviewer 2 | Quality Checker |
|---------|---|-------------|---------------------------|--------------------------|-----------|------------|------------|-----------------|
| D1.1    | End-user requirements and specification                             | HUG         | R                         | PU                       | M6        | TUC        | TLU        | TUC             |
| D1.2    | H2HCare architecture - 1st version                                  | TUC         | R                         | PU                       | M8        | HUG        | NIS        | TUC             |
| D1.3    | Services co-design and intelligent dashboard mock-ups - 1st version | NIS         | R                         | PU                       | M10       | TLU        | TUC        | TUC             |
| D1.4    | H2HCare architecture – 2nd version                                  | TUC         | R                         | PU                       | M12       | SN         | NIS        | TUC             |
| D1.5    | Services co-design and intelligent dashboard mock-ups - 2nd version | TUC         | R                         | PU                       | M18       | TUC        | TLU        | TUC             |
| D2.1    | Pre-discharge Risk Assessment Service - 1st release                 | TUC         | R/P                       | CO                       | M12       | HUG        | TLU        | TUC             |
| D2.2    | Post-Discharge Monitoring Service – 1st release                     | TLU         | R/P                       | CO                       | M12       | SN         | NIS        | TUC             |
| D2.3    | Digital assistant Coaching Service – 1st release                    | NIS         | R/P                       | CO                       | M12       | TUC        | TLU        | TUC             |
| D2.4    | H2HCare system integrated prototype – 1st release                   | TLU         | R/P                       | CO                       | M15       | NIS        | TUC        | TUC             |
| D2.5    | Pre-discharge Risk Assessment Service - 2nd release                 | TUC         | R/P                       | CO                       | M18       | SN         | NIS        | TUC             |
| D2.6    | Post-Discharge Monitoring Service – 2nd release                     | TLU         | R/P                       | CO                       | M18       | HUG        | TUC        | TUC             |
| D2.7    | Digital assistant Coaching Service – 2nd release                    | NIS         | R/P                       | CO                       | M18       | TUC        | TLU        | TUC             |
| D2.8    | H2HCare system integrated prototype – 2nd release                   | TLU         | R/P                       | CO                       | M22       | TUC        | NIS        | TUC             |
| D2.9    | H2HCare final services and prototype                                | TUC         | R/P                       | CO                       | M30       | HUG        | TLU        | TUC             |
| D3.1    | Code of Conduct   | SN          | R                         | PU                       | M3        | HUG        | TLU        | TUC             |
| D3.2    | Recruitment and test protocol                                       | HUG         | R                         | CO                       | M10       | SN         | NIS        | TUC             |

<sup>1</sup> R = Report, P = Prototype, DEM = Demonstrator, OTH = Other

<sup>2</sup> PU = Public, CO = Confidential



|      |   |     |       |    |     |     |     |     |
|------|---|-----|-------|----|-----|-----|-----|-----|
| D3.3 | H2HCare services effectiveness evaluation in contr. environment                 | HUG | R/DEM | CO | M16 | SN  | TUC | TUC |
| D3.4 | 1 <sup>st</sup> field trials evaluation feedback report                         | SN  | R/DEM | CO | M21 | HUG | TUC | TUC |
| D3.5 | 2 <sup>nd</sup> field trials evaluation feedback report                         | HUG | R/DEM | CO | M24 | TUC | SN  | TUC |
| D3.6 | 3 <sup>rd</sup> field trials evaluation report – including business perspective | HUG | R/DEM | CO | M34 | TLU | NIS | TUC |
| D4.1 | H2HCare website   | NIS | OTH   | PU | M3  | TLU | TUC | TUC |
| D4.2 | Dissemination plan  | TUC | R     | PU | M12 | HUG | SN  | TUC |
| D4.3 | Intermediate business plan/model  | NIS | R     | CO | M18 | TLU | TUC | TUC |
| D4.4 | Exploitation plan   | TLU | R     | CO | M18 | NIS | TUC | TUC |
| D4.5 | Final business plan/model   | NIS | R     | CO | M35 | TLU | TUC | TUC |
| D5.1 | Project Quality Control Plan  | TUC | R     | PU | M3  | HUG | TLU | TUC |
| D5.2 | First Year Report   | TUC | R     | CO | M11 | NIS | SN  | TUC |
| D5.3 | Mid-term review questionnaire   | TUC | R     | CO | M18 | SN  | HUG | TUC |
| D5.4 | Second Year Report  | TUC | R     | CO | M23 | SN  | TLU | TUC |
| D5.5 | Final Report  | TUC | R     | CO | M36 | NIS | HUG | TUC |

#### 4.4 Deliverable preparation process

Before starting on its production, the person responsible for the deliverable will define the document structure and the contributions expected from each partner by defining a plan that contributors must follow to avoid delays.

The deliverable responsible circulates the deliverable development plan and requires approval from peer-reviewers assigned to the document. The ToC must report a short description of contributions expected in each single section together with the assignment of responsibility to partners involved in the deliverable. Once the ToC is approved by peer-reviewers and consolidated by the deliverable responsible all the partners are invited to contribute. Contributions are merged together by the deliverable responsible, who is in charge to check the consistency and coherency of the content, can ask for clarifications or for further/different contributions. During the production of the deliverable, there may be other intermediate phases where peer-reviewers are asked to check partial drafts, but mainly because of time constraints, this cannot be established as a rule. The deliverable responsible will be the only person responsible for checking the technical quality of the deliverable as it progresses.

The deliverable responsible will then prepare a complete draft which will be sent to the assigned peer-reviewers, who may reiterate and re-circulate the deliverable as required until the necessary quality level is attained.

The peer-reviewers will check the deliverable from the following points of view:



- the deliverable covers the objectives stated in the CA;
- the deliverable is complete (there are no missing parts, non-existing references, topics not covered, arguments not properly explained);
- the quality of the work described in the document is acceptable and is in accordance with what was expected.

**The Peer-Reviewers are required to apply changes in MS Word revision track mode and to provide comments by creating proper MS Word comments.**

Then the deliverable is sent as release candidate to the quality checker for a final quality check. The quality checker is not required to review the but to simply check that the deliverable responsible has edited the deliverable in compliance with the editing guidelines. **The quality checker may ask the deliverable manager for changes if the deliverable does not comply to the project quality standards.**

As a last step of the PM will prepare the deliverable for submission to the AAL CMU.

As mentioned above, deliverables are not circulated via e-mails but are uploaded on the web repository following a **specific timeline**:

- ToC and release plan - **at least 1 months** before official deadline
- Complete draft for peer-review – **at least 15 days** before official deadline
- Release candidate for QC - **at least 5 days** before official deadline
- Release for Coordinator - **at least 3 days** before official deadline
- Release for the AAL CMU (Final) - **within** the official deadline

**Deliverables are provided to the AAL CMU according to the delivery date specified in the Consortium Agreement or before the mid-term review**, by converting the document into PDF (if not already done before) and uploading the document on web repository or sending them by email.



## 5 Problem management and monitoring

### 5.1 Resolution of problems and conflicts

The consortium will handle the resolution of problems and conflicts systematically. Identification of any conflicts which arise in the project is the responsibility of all project participants. Any signs of disagreement between project participants should be notified to the WP Leader. If the WP leader is unable to resolve the conflict the Technical & Impact Managers (as appropriate) are notified, to instigate the conflict resolution procedure, escalating to higher levels only if necessary.

The notified manager should separately contact all parties either in person or by telephone, to identify the different viewpoints. Based on a clarification of viewpoints, the coordinator should try to propose a solution. If one is achieved, it should be recorded in a short report; if not, no documents should be produced, and the problem escalated. If first level fails, the matter should be taken up by the SC. At this level, all work should be in writing. If necessary, partner representatives will be required to vote on the issue.

The SC will take the final conflict resolution decision which will be communicated to the involved parties.

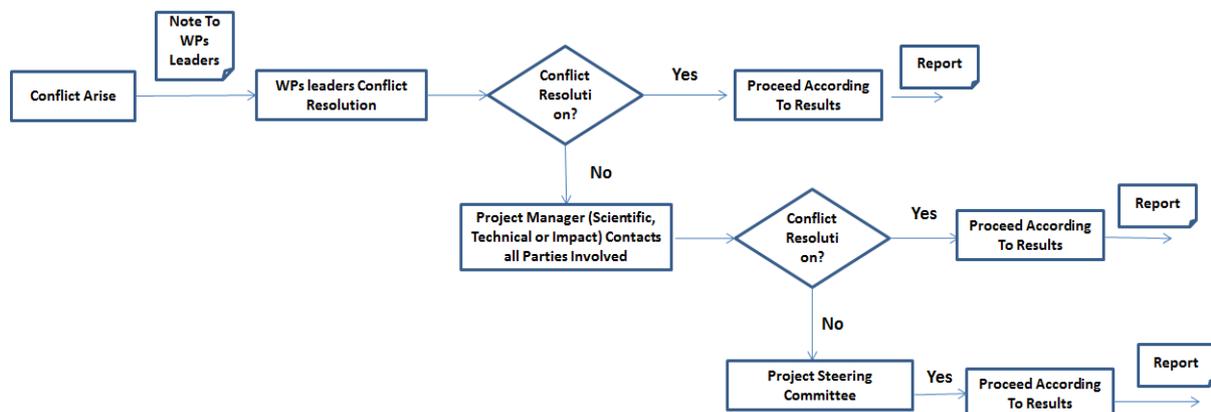


Figure 4: Conflict resolution flow.

### 5.2 Problems encountered until month 20

In general, the project activities follow accurately the description of work, however during project implementation problems had been encountered that resulted in deviations from the DoW in terms of delaying some of the deliverables. In this section we present the main problems encountered between project Month 0 and Months 20 which had impacted the description of work and the way in which it was mitigated.

#### 5.2.1 CCARE partner exit

4 months after the project start ConnectedCare Services b.v decided to drop out.

Their involvement in the project was very low since the beginning. They have been participated to less than 25% of our progress meetings without bringing any relevant contribution. The main reason of their exit can be that not having budget allocated they have considered this project as low priority and finally deciding to be officially out.

The impact of their exit was minimal and the 6 PM were distributed in the consortium (4PM to No Isolation, 1PM to Technical University of Cluj-Napoca and 1PM to Tellu IoT AS) without requesting additional funding. following this change, the project is still complying with the general rule of having minimum 3 countries and higher involvement of business partners.



A new version of the description of work has been generated to reflect the above modification and it was approved by AAL CMU in M6.

### 5.2.2 Trials in controlled environment

We have faced difficulties for releasing on time deliverable D3.3 H2HCare services effectiveness evaluation in controlled environment. This deliverable was released on 9 July 2021 (M16) instead of end of May 2021 (M14). The COVID-19 pandemic led us to define a covid protection plan with the division of Infection Prevention and Control, to put in place the necessary safeguards to protect the participants, some of whom were vulnerable individuals. Usability tests in controlled environment were carried out in June, once the protection plan has been finalised and protective measures have been put in place. The usability tests took place from 9th to 21st June 2021 and D3.3 was finalised on 9th July 2021.

### 5.2.3 Trials demonstration

Usability tests delays have also shifted the first field trials, while COVID pandemic made it difficult to analyse in depth the first versions of the protocol for the first field trials. We have worked on defining the scheduling, planning, protocols, and all the measures required for successfully carrying out trials and we have released a pre-trials version of D3.4 in M18. This protocol required careful attention as it must be ensured that all elements are present, clear, and precise enough for the submission to the Ethics Committee in Geneva and Norway. Moreover, tasks that are requested to the formal caregivers required special attention and internal discussions to analyse the feasibility of their involvement. Formal caregivers are indeed very busy, and the COVID-19 pandemic increases the difficulty for them to be available. At the same time the approval of the protocol took a lot of time and it was received in November.

In this context we were forced to delay deliverable D3.4 1st field trials evaluation feedback report from M17 as defined in the workplan to M21. Also, during the MTR, the reviewers' feedback had highlighted the importance of conducting longitudinal trials in Switzerland with a focus on the readmission rate KPI. Thus, the consortium decision was to skip the filed trials demonstrations in Switzerland and focus exclusively on longitudinal trials demonstrations in two phases each of 3 months. In Norway the original plan remained unchanged with one field demonstration and one phase longitudinal trials demonstration. Thus, we have worked on defining an updated version of scheduling, planning, protocols reflecting the MTR feedback and it is included in an updated version of D3.4 together with field trials results in Norway successfully released in M21.

## 5.3 Risk management

According to ISO 31000<sup>3</sup>, a risk management process is a process that systematically applies management policies, procedures, and practices to a set of activities intended to establish the context, communicate and consult with stakeholders, and identify, analyse, evaluate, treat, monitor, and review risk (see Figure 5). The main elements of the risk management process are:

- **Context identification** – defining the objectives for the risk management process and establishing the risk evaluation criteria considering both internal and external factors.
- **Risk identification** – Identify what could prevent a certain activity, task etc/ to achieve the envisioned objectives.
- **Risk analysis** – For identified risk evaluate and document their consequences and estimate their likelihood /frequency.
- **Risk evaluation** – compare estimated levels of risk against pre-established criteria, ranking the risks to identify management priorities.

<sup>3</sup> ISO 31000, <https://risk-engineering.org/ISO-31000-risk-management/>



- **Risk treatment** – accept and monitor low-priority risks and identify options for risk treatment for non-acceptable risks.
- **Monitoring and review** - checking for deviations from the risk management plan and reviewing its effectiveness.
- **Communication and consultation** – find support for verifying that the risk management process is focusing on the right elements and for assessing risk treatment options.

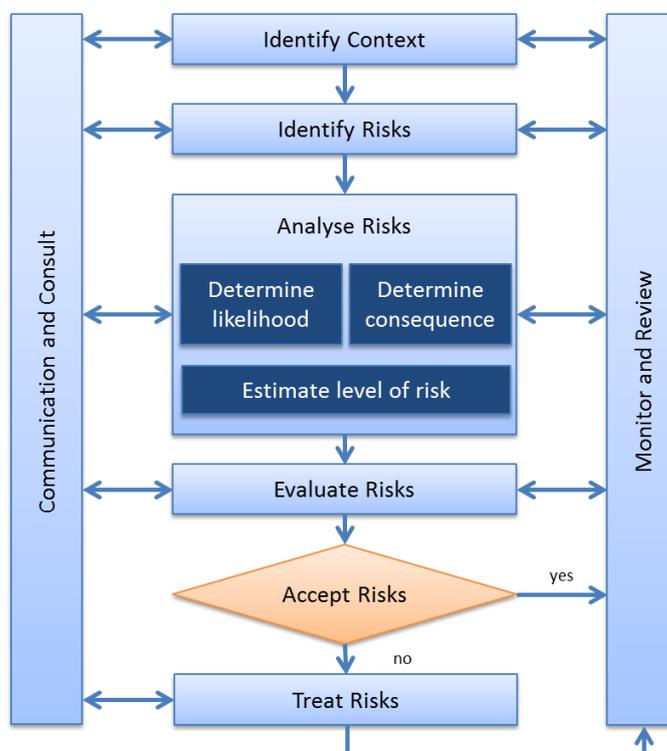


Figure 5: ISO 31000 Risk Management process.

Risks are continuously monitored, throughout the project, keeping track of the risks and evaluating the effectiveness of the contingency actions. Monitoring may also provide a basis for developing additional response actions and identifying new risks.

Project team members participate in the risk identification process and discuss risk monitoring and mitigation activities at team meetings.

H2HCare will employ the risk management process described above to identify, assess, mitigate, monitor and control risks related to administrative, technical and financial issues, throughout the project life cycle. Risk management in H2HCare is built upon cross-partner risk awareness. Risks, problems and open issues will be discussed during periodic H2HCare meetings.

The partners are fully aware that they take the responsibility of an ambitious, innovative project with major strategic impact. Most of the partners have experience in similar, challenging projects and many of them have successfully collaborated in the past. Therefore, it is foreseen that the project will safely realise its expected results. However, as an innovative and challenging project, H2HCare is expected to confront risks of technological, managerial and administrative nature. The success of the project depends on the timely identification of the risks and the establishment of an efficient risk management process.

Risks will be documented and tracked in the project through a **Risk Register excel file** stored in the web repository and containing for each risk the following information:

- **Risk ID** – a unique identification number used to identify and track the risk in the risk register



- **Risk Category** - category where the risk falls (technological, market uptake, external, project management)
- **Risk Description** – A brief description of the potential risk
- **Linked WPs** – Link to the WP/task
- **Likelihood** – The estimated likelihood that the risk will occur at some point and become a project issue. It will be qualitative: *very likely, likely, moderate, unlikely, rare*
- **Impact** – The potential consequence or impact of the risk if it did become a project issue (*negligible, minor, moderate, major or extreme*).
- **Contingency Plan** – This is an action plan to address the risk if it does occur
- **Risk Owner** – the person/partner responsible for managing the risk and implementing the contingency plans
- **Status** – Status of the risk management (open, closed).
- **Dates** - Dates when the risk has been identified and closed.

|             |             | Impact     |        |          |        |         |
|-------------|-------------|------------|--------|----------|--------|---------|
|             |             | Negligible | Minor  | Moderate | Major  | Extreme |
| Probability | Rare        | Low        | Low    | Low      | Medium | Medium  |
|             | Unlikely    | Low        | Low    | Medium   | Medium | Medium  |
|             | Moderate    | Low        | Medium | Medium   | Medium | High    |
|             | Likely      | Medium     | Medium | Medium   | High   | High    |
|             | Very likely | Medium     | Medium | High     | High   | High    |

Figure 6: Risk matrix.<sup>4</sup>

The consortium has identified risks and factors that are critical to its success and it will continuously follow methods and procedures to identify, assess, monitor and control areas of risk. This list has been updated in M20 to reflect the current project status, the COVID pandemic and the envisioned new risks and is reported in Appendix 1 – Risk register table, along with their associated information.

<sup>4</sup> [https://en.wikipedia.org/wiki/Risk\\_matrix](https://en.wikipedia.org/wiki/Risk_matrix)



## 6 Conclusions

This report defines an update of the procedures and rules that the H2HCare project participants must follow to produce high quality results. The updated was done considering the reviewers comments received during MTR. All the project governance bodies were defined based on what was already established and accepted by all the participants by signing the CA. Also, the workflows for document preparation and delivery as well as for communications among partners are explained.

## Appendix 1 – Risk register table

| Risk ID | Category      | Description   | WPs   | Likelihood | Impact | Risk matrix rate | Contingency Plan   | Risk Owner | Status | Identification Date | Closure Date |
|---------|---------------|---|-------|------------|--------|------------------|--|------------|--------|---------------------|--------------|
| R1      | Technological | H2HCare services not operational  | WP2   | Rare       | Medium | LOW              | Involving end-users' partners in innovation development. Involve technical partners that are highly experienced in developing AAL solutions. Organize regular technical meetings to track progress.                | TUC        | Open   | Apr-20              | N/A          |
| R2      | Technological | Digital assistant-based coaching shows low effectiveness for transnational care | WP1-2 | Unlikely   | Major  | MEDIUM           | High-level engagement of end users in evaluation. Early in lab evaluation (M12) Replace with equivalent solution more fit (tablet). Technical partners Assure missing functionalities development. SN and HUG will | NIS        | Open   | Apr-20              | N/A          |



|    |               |   |       |          |          |        |   |     |      |        |     |
|----|---------------|---|-------|----------|----------|--------|---|-----|------|--------|-----|
|    |               |   |       |          |          |        | increase the opportunities for user feedback and informal validation.   |     |      |        |     |
| R3 | Technological | Daily life activity monitor and assessment fails to capture senior self-management problems | WP1-2 | Unlikely | Moderate | MEDIUM | Focus on on-the-self sensors and wearable devices. Involving partners providing heart failure knowledge in innovation development. Use data science to make the assessment. Organize regular meetings with technical partners to track progress and address issues. | TUC | Open | Apr-20 | N/A |
| R4 | Technological | H2HCare ICT solutions cannot be integrated, or interfacing problems are detected            | WP1-2 | Rare     | Major    | MEDIUM | Define interfaces for ICT solutions integration in services early (M10), check consistency and low coupling of services integration architecture - WP1. Leverage on open  | TUC | Open | Apr-20 | N/A |



|    |                    |  |       |          |            |        |  |     |      |        |     |
|----|--------------------|--|-------|----------|------------|--------|--|-----|------|--------|-----|
|    |                    |  |       |          |            |        | APIs to integrate solutions. Adopt and follow integration guidelines and best practices.   |     |      |        |     |
| R5 | Project management | Shortage of resources and/or change of personnel                 | WP5   | Moderate | Negligible | LOW    | Keep close contact with all partners. Early communication of budget and personnel problems. Adjust goals and responsibilities. Find replacement for personnel. | TUC | Open | Apr-20 | N/A |
| R6 | Project management | Lack of communication among the partners                         | WP5   | Rare     | Moderate   | LOW    | Close contact among partners by regular teleconferences, virtual meetings, plenary and technical meetings at different partners' sites or online.              | TUC | Open | Apr-20 | N/A |
| R7 | Market uptake      | H2HCare services do not match end-user needs and business models | WP1-4 | Unlikely | Major      | MEDIUM | Involve end-users and domain experts in the co-creation and exploitation plans. Use KPIs results   | NIS | Open | Apr-20 | N/A |



|    |           |  |     |          |          |        |  |     |      |        |     |
|----|-----------|--|-----|----------|----------|--------|--|-----|------|--------|-----|
|    |           |  |     |          |          |        | from trials evaluation to construct value-based proposition. Consider two type of business models one targeting older adults and one targeting tertiary stakeholders. Revision of suitable business models with stakeholders and end-users leveraging on AB experts. |     |      |        |     |
| R8 | End-users | Poor engagement of end-users in trials | WP3 | Moderate | Moderate | MEDIUM | Secure a high number of end-users since the proposal phase. Conduct pilots in two different sites. Define clear informed consent, recruitment procedures and COVID-19 protection rules. Highlight the benefits of the proposed solution in pre-trials                | HUG | Open | Apr-20 | N/A |



|     |               |  |     |          |          |        |  |     |      |        |     |
|-----|---------------|--|-----|----------|----------|--------|--|-----|------|--------|-----|
|     |               |  |     |          |          |        | workshops with the end-users.  |     |      |        |     |
| R9  | End-users     | Longitudinal field trials outcome and success indicators assessment problems | WP3 | Unlikely | Moderate | MEDIUM | Engage 2 end-users partner organizations in mapping KPIs and outcomes and gathering data. Use methods such as questionnaires to collect opinions and refer to the state-of-the-art values. Focus on Switzerland on hospitalization rate reduction while on Norway on the quality of life. Match KPIs with alternative business models value-based proposition. | HUG | Open | Apr-20 | N/A |
| R10 | Market uptake | Dissemination not effective  | WP4 | Rare     | Moderate | LOW    | Dedicate enough resources to dissemination. Dissemination planning. Monitor and evaluate the dissemination results. Adapt the  | NIS | Open | Apr-20 | N/A |



|      |               |   |       |          |          |        |   |     |      |        |     |
|------|---------------|---|-------|----------|----------|--------|---|-----|------|--------|-----|
|      |               |   |       |          |          |        | dissemination strategy to pandemic contexts by focusing on online and remote channels.  |     |      |        |     |
| R1 1 | Market uptake | New legislative barriers reduce services viability                          | WP4   | Rare     | Moderate | LOW    | Consortium partners will provide a continuous link to legislative bodies to be informed at an early stage about any barriers. Start from analyzing consortium countries barriers and extend to their network of sales. Analyze medical device regulation. | NIS | Open | Apr-20 | N/A |
| R1 2 | End-users     | H2Hcare fails to produce targeted improvements in quality of life of elders | WP1-4 | Unlikely | Extreme  | MEDIUM | Employ a user centric design approach. Services will be piloted in home environment of elders to obtain relevant feedback. The feedback will be used to improve the innovation process. Select,   | HUG | Open | Apr-20 | N/A |



|         |               |   |       |          |          |        |  |     |      |        |     |
|---------|---------------|---|-------|----------|----------|--------|--|-----|------|--------|-----|
|         |               |   |       |          |          |        | and evaluate effective quality of life assessment questioner from state of the art.  |     |      |        |     |
| R1<br>3 | Market uptake | H2Hcare services do not achieve the maturity for future market uptake         | WP1-4 | Moderate | Minor    | MEDIUM | Develop the configurable services. Adopt continuous integration methodology and 3 iterative development cycles based on user feedback. Trials planned to provide KPIs values to sustained value-based business models. | TLU | Open | Apr-20 | N/A |
| R1<br>4 | Market uptake | H2Hcare pricing strategy doesn't correlate with brand and technology position | WP4   | Unlikely | Moderate | MEDIUM | Business plan and price estimation conducted by business partners. Estimated costs of Komp. Conduct cost benefit and willingness to pay analysis. Define H2Hcare suites for different end users target groups.         | NIS | Open | Apr-20 | N/A |



|         |               |  |           |          |       |        |   |     |      |        |     |
|---------|---------------|--|-----------|----------|-------|--------|---|-----|------|--------|-----|
|         |               |  |           |          |       |        | Consider hiring a professional sales team to support the market roll out in the years following the project end.  |     |      |        |     |
| R1<br>5 | End-users     | Privacy, reliability and security concerns | WP2<br>-3 | Rare     | Major | MEDIUM | Build around ethics policies defined in the project domain. Define informed consent, obtain ethical approvals from specialized committees, implement data security and protection measures. | HUG | Open | Apr-20 | N/A |
| R1<br>6 | Technological | Lack of standards                          | WP2<br>-4 | Unlikely | Minor | LOW    | H2Hcare will continuously watch relevant standards and open APIs to consider them in implementation   | NIS | Open | Apr-20 | N/A |



|         |           |   |           |        |          |        |  |     |        |        |        |
|---------|-----------|---|-----------|--------|----------|--------|--|-----|--------|--------|--------|
| R1<br>7 | End-users | Delay in gathering end-user requirements in the beginning of the project due to extraordinary situations such as COVID19 pandemic | WP1<br>-4 | Likely | Moderate | MEDIUM | End-user partners will make use of virtual interaction tools with end-users for gathering user requirements and capturing their needs. Start the requirements shaping process from a in depth state of the art. Use online questioners, forms and other web-based tools for interacting with end-users. Use online mockups and presentations for acquiring valuable inputs from the end-users involved in the project. | HUG | Closed | Apr-20 | Oct-20 |
|---------|-----------|---|-----------|--------|----------|--------|--|-----|--------|--------|--------|



|         |                    |   |       |        |       |        |  |     |        |        |     |
|---------|--------------------|---|-------|--------|-------|--------|--|-----|--------|--------|-----|
| R1<br>8 | Project management | Consortium partners change                  | WP5   | Rare   | Major | MEDIUM | Evaluate constantly partners involvement in the project. If a partner leaves the consortium distribute their efforts to other members of the projects without additional financing. Identify new leaders for the tasks of the existing partners. | TUC | Closed | Jun-20 | N/A |
| R1<br>9 | End-users          | Delays in carry out the Longitudinal trials | WP3-4 | Likely | Major | HIGH   | Analyze and update the trials planning and the proposed protocols. Reschedule trials, delay deliverables. Request project extension to cover the delays.   | HUG | Open   | Nov-21 | N/A |



|         |               |  |     |          |          |        |  |     |      |        |     |
|---------|---------------|--|-----|----------|----------|--------|--|-----|------|--------|-----|
| R2<br>0 | Market uptake | Trial results do not validate the rehospitalization rate reduction and cannot be used medical device certification | WP4 | Likely   | Minor    | MEDIUM | Define separate business plans with and without medical device certification. Define different packages that can be commercialized for different target groups. Consider a setting longer term clinical trials after project ends.       | TLU | Open | Nov-21 | N/A |
| R2<br>1 | Market uptake | Commercialization not successful   | WP4 | Moderate | Moderate | MEDIUM | Define a specific business model for tertiary end-users and for primary end-users. Consider different KPIs and revenue streams. Use business partners knowledge to maximize commercialization potential. Use business models adaptively. | NIS | Open | Nov-21 | N/A |