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## Abstract

This document describes the dissemination and communication activities planned for the SELFBACK project. Communication and dissemination of results to all relevant stakeholders - including end users, academia, government bodies, industry and the general public is vital to ensure the impact of the SELFBACK results.

The first chapter outlines the general and specific scope and objectives of the plan. Chapter 2 gives an overview of the general tools, procedures and tasks for targeted communication. This is followed by a description of the most important target groups and ways to engage and connect with these (chapter 3). Guidelines for scientific publications and dissemination activities follow next (chapter 4). The document ends with describing the metrics for the annual evaluation of the communication results (chapter 5), the distribution of responsibilities and tasks (chapter 6), and a brief summary (chapter 7).

This deliverable is the first in WP6 Innovation Management, and will be followed by deliverables D6.2, Knowledge management plan (due M18), D6.3 Business plan (due M30), D6.4, Results after the implementation of the business plan (due M60), and finally D6.5, Report on go-to-market strategy and product development (due M60). HLE is the lead beneficiary of WP6, but all partners will be involved in the dissemination and communication activities.

## Document History

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0.2	27/10/16	Ida Antonsen	Added chapter 4, Guidelines for scientific publications and dissemination activities. Revision of report.
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## Acronyms

DoA	=	Description of Action
EC	=	European Commission
EU	=	European Union
ICMJE	=	International Committee of Technology Journal Editors
ICT	=	Information and Communication Technology
IPR	=	Intellectual Property Rights
LBP	=	Low Back Pain
mHealth	=	Mobile Health
SEO	=	Search Engine Optimization
SME	=	Small and Medium-sized Enterprises

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## 1 Scope and objectives

The overall aim of WP6 is to ensure that the results from the SELFBACK project achieves the maximum impact possible. The dissemination and communication plan describes the strategy and tools that will be used to attract relevant stakeholders and to identify and organize the activities that are vital in promoting the project's results. The main objectives of the communication and dissemination activities are the following:

- To create a brand voice and brand style for the SELFBACK project
- To create authority and community leadership for the SELFBACK project
- To attract relevant target groups and stakeholders to the project
- To showcase to EU policy makers, the possible impact on society and citizens
- To show the results of the research and the progress of the project to the general public and the EC.

Modern communication focuses on networks and communities, both off- and online. An important overall objective of the project is to attract important stakeholders to the project by creating a community around the subject of 'self-management of non-specific LBP' with the SELFBACK consortium as the main authority and thought leader. This will create a pull effect from all important stakeholders to the project, thus making dissemination and exploitation easier.

This plan takes to heart the goals of the EU Guidelines on communication and innovation stated in the 'Horizon2020 Communicating EU research and innovation guidance for project participants, which outlines three main objectives:

- Showing how European collaboration has achieved more than would have otherwise been possible
- Showing how the outcomes are relevant to our everyday lives
- Making better use of results, by making sure they are taken up by decision makers to influence policy-makers and by industry and scientific community to ensure follow-up.



Figure 1: Visual for the projected community leadership by SELFBACK on self-management of LBP.

The current plan aims to provide a clear and concise description of the main communication and dissemination activities in the SELFBACK PROJECT. The communication and dissemination activities are divided into one-off tasks and recurring tasks. An overview of these tasks and the responsible partners for each task are described in chapter 6. The list of tasks provided in the overview is dynamic and will be adjusted throughout the project.

Communication and dissemination is a group effort and all partners must contribute to disseminate the project results via scientific publications, social and regular media, press releases, etc. To enhance the visibility and recognisability of the project, all partners are encouraged to follow the guidelines outlined below:

- The visual communication must be consistent. This means that using the house style of the SELFBACK project at all time is important: see chapter 2 or detailed instructions.
- The brand voice needs to be consistent, including the kind of words and tone of voice we use: see chapter 2 for guidelines on this.
- The main target groups for our communication and dissemination activities are well defined: see chapter 3 for detailed descriptions.

## 2 Tools for dissemination and communication

### 2.1. Project voice

#### **Responsible partners: HLE, NTNU**

For the joint communication it is important to have a consistent tone of voice and vocabulary. As a guideline for the vocabulary the grant proposal is a good reference. For the tone of voice, the following key words may serve as a guideline:

- Evidence based
- Authoritative
- Self-management
- Personalized treatment
- Patient oriented
- Patient empowerment

### 2.2. Project visual identity

#### **Responsible partner: KIO**

In SELFBACK, we aim to have a visual identity that ensures consistent and easily recognizable project outputs. It is therefore important that all members use the house styles as described below.

The project logo (figure 2) and house style (figure 3), including colours and fonts, has been developed and accepted by the SELFBACK consortium. This is to be used for all communication material, both on- and offline (e.g. brochures, posters, presentations, etc.). Templates for PowerPoint and poster presentations are available for the consortium members. Likewise, a project summary to be used for press releases, teasers and external information purposes (2 page teaser, project abstracts) are available for the consortium members.



Figure 2: The SELFBACK logo.

The logo in different styles and formats are available for the consortium members.



Figure 3: The house style colors and fonts. For the final product (the commercial version of the selfBACK app) we envision the development of a new name and visual expression.

### 2.3. Website

**Responsible partner: KIO**

**Website development and maintenance: KIO**

**Website content: All partners**

The website [www.selfBACK.eu](http://www.selfBACK.eu) will be the ‘home’ of the project where project information, events, activities, results, etc. will be presented and disseminated to the larger public. The website contains or will contain the following content:

- Homepage with general information on the project
- Links to social media
- Information on the consortium institutions and the advisory board members
- Publications and research results
- Contact information

For Search Engine Optimization (SEO), the website content will be written as much as possible with optimal search engine results in mind. Although the project website is an important tool for communication and dissemination, most communication will be done by

distributing the website content to relevant stakeholders through the channels and communities they use, such as forums, events, conferences, online/offline media, and in particular through social media channels.

#### 2.4. Press releases

**Responsible partners: NTNU, all partners**

Press releases will be coordinated in timing and content by the project coordinator, as per the EU requirements.

#### 2.5. The communication calendar for recurring activities

**Responsible partner: HLE**

Figures 4 and 5 show communication activities for the first two years of the project. Cycles for the following three years will be implemented based on new insights, experience and updated objectives from the first two years.

In addition to the recurring activities, there will also be communication activities that are one-off initiated by events, conferences and news items.

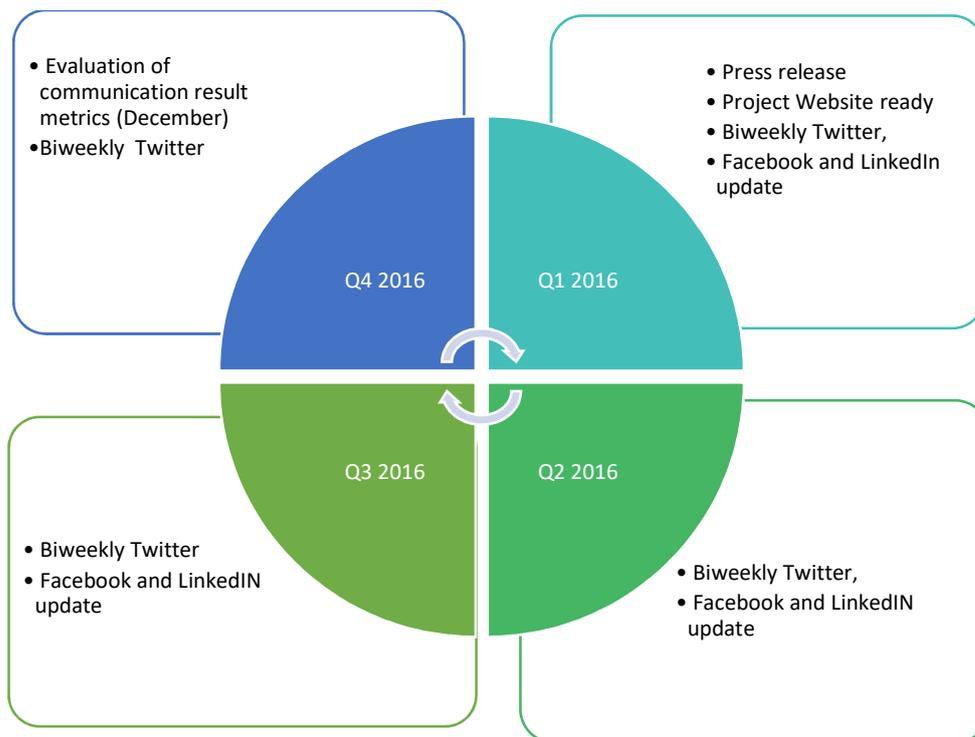


Figure 4: Communication Activities 2016.

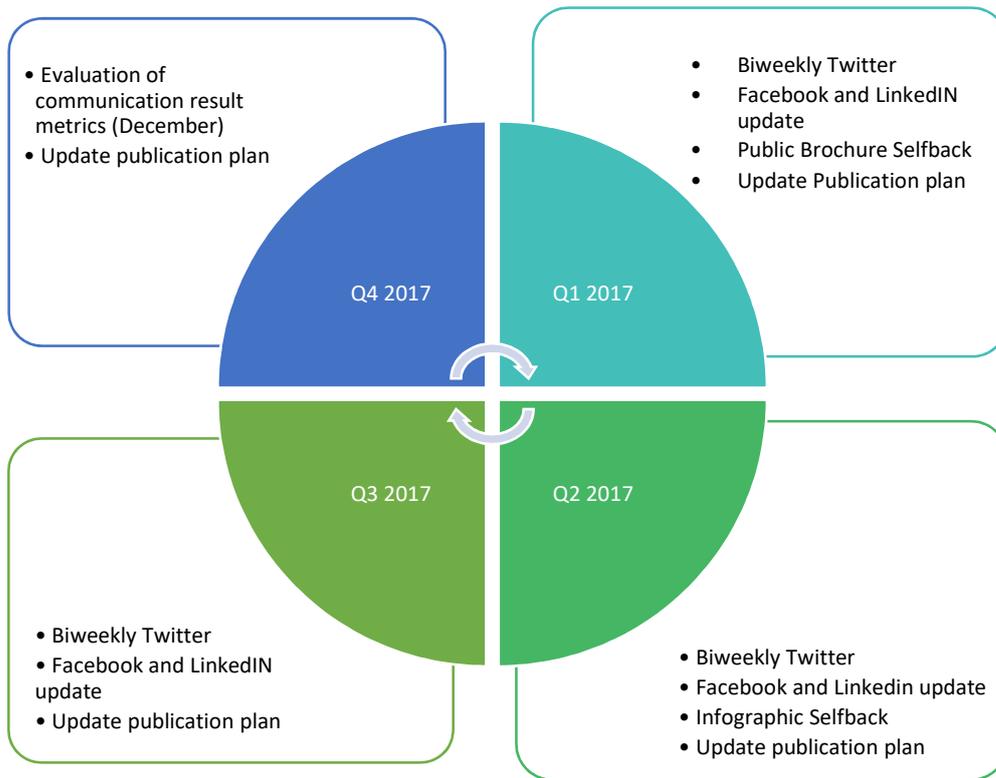


Figure 5: Communication activities 2017.

## 2.6. Social media channels

### Responsible partners: HLE, all partners

Social media channels are important for creating a community around the SELFBACK project. Active use of social media will increase the visibility of the project and help to establish an online community for dissemination and thereby rise the public awareness about the project results. The following channels have been and will be used regularly by SELFBACK:

- Facebook
- Twitter
- LinkedIn

A regularly updated Facebook page with followers can easily disseminate information and engage a large number of stakeholders. Twitter is ideal for regular communication and discussion on the topics concerning LBP pain and mHealth. If used well, it can be a platform for creating authority on these subjects. LinkedIn groups, either engaging in existing group discussions or by creating our own channel, can be beneficial as well to become a community leader around self-management of LBP. The abovementioned channels have been used by SELFBACK from the start of the project and regularly since. The intensity and frequency are expected to increase yearly.

HLE will take the lead in guiding the consortium partners in using social media channels and also assist consortium partners with dissemination of results from publications (e.g., scientific publications) via social media channels. Nevertheless, communication and dissemination through social media channels must be carried out as a consortium effort, and all project partners should share information on the various social media using the relevant hashtags, such as:

- @selfBACK
- #selfBACK
- #digitalhealth
- #mhealth
- #ehealth
- #horizon2020
- #lowbackpain
- #backpain
- #physicaltherapy
- #physiotherapy
- #primarycare
- #chiropractic

## 2.7. Infographic

### Responsible partner: HLE

Infographics (figure 6) are visual presentations of information and they can effectively display messages to the general public. Furthermore, they are often shared on social media channels. We will design a SELFBACK infographics (Q2, 2017) in the house style at <http://piktochart.com> and showcase it on the website and in different (social) media channels.



Figure 6: Example of a related infographic from UK Chief Medical Officers' Guidelines (2011). [https://www.gov.uk/government/uploads/attachment\\_data/file/541233/Physical\\_activity\\_infographic.PDF](https://www.gov.uk/government/uploads/attachment_data/file/541233/Physical_activity_infographic.PDF)

## 2.8. Brochure and teaser

### **Responsible partners: HLE**

A brochure for the general public will be developed by HLE in Q2 of 2017. This brochure will contain information on the research but will focus mainly on the results and foreseen benefits for people with low back pain. The brochure will be downloadable from the website and shared through all social media channels. Printed versions will be distributed at relevant conferences and events.

HLE has also developed a teaser aimed at facilitating and engaging potential business partners for the subsequent go-to-market strategy and business modelling. The first version SELFBACK teaser aimed at potential business partners is ready and have been made available for all partners (see appendix 1). The teaser will only be shared with relevant industry partners.

## 2.9. Scientific presentations

### **Responsible partners: NTNU, HLE, KIO**

When presenting results from the SELFBACK project, a uniform visual style helps to build a brand name and create recognition of the project. PowerPoint and poster templates have been created for project presentations at events, conferences, and other scientific venues (oral and poster), as well as for publishing on the website and other online media. These templates are available for all consortium partners (see appendix 2).

## 2.10. TED Talk and Exponential Medicine

### **Responsible partner: HLE**

TED.com is a non-profit organization devoted to spreading ideas, usually in the form of short talks (18 minutes or less). TED began in 1984 as a conference where Technology, Entertainment, and Design converged. Today, TED covers almost all topics – from science to business to global issues – in more than 100 languages.

All TED Talks are published online and many TED Talks go viral and are watched millions of times around the world. Thus, a well-planned and successful TED Talk can be a very influential way for introducing a new concept or idea and attract attention to a project. TEDx's are local TED conferences that are organized all over the world, for example in Oslo, Norway (<http://www.tedxoslo.no>). TEDxNijmegen.nl in the Netherlands is an event that is exclusively aimed at healthcare issues and thus of particular relevance for SELFBACK. Finally, TEDMED is a worldwide medical TED conference that is fully dedicated to healthcare with influential speakers and participants. SELFBACK aims to give at least one TED Talk toward the end of the project.

Exponential Medicine, curated by the think-tank Singularity University, is also a good conference for introducing the SELFBACK project and its concepts (<https://exponential.singularityu.org/medicine/>). Exponential Medicine brings together

leading thinkers, innovators, and practitioners within medicine to reveal what is happening in laboratories and clinical trials today, and what game changing technologies are likely coming to market in the next 2 to 10 years. Exponential Medicine is an "application required" program of world-class faculty mixed with highly curated participants who want to break across traditional silos, cross-fertilize, understand, and leverage rapidly developing technologies to reinvent and improve many elements of healthcare and biomedicine. SELFBACK will aim at being invited as a presenter at the Exponential Medicine conference in 2019 or 2020.

### 2.11. List of relevant events and conferences

Participation at scientific events and conferences will allow collecting and evaluating feedback from target scientific audience in order to improve the project impact. The following list is an overview of relevant recurring conferences for the consortium:

- International Back and Neck Research Forum. Arranged every 18th month around at different places in the world. This conference gathers experts from countries all over the world with a strong and committed interest for research on spinal pain.
- World Confederation for Physical Therapy. Arranged every 2nd year and is the sole international voice for physical therapy, representing more than 350.000 physical therapists worldwide. The confederation operates as a non-profit organisation and is registered as a charity in the UK.
- The World Congress on Pain. Arranged every 2<sup>nd</sup> year. This congress provides a state-of-the-art overview of a wide range of topics in pain research and treatment and offers networking opportunities with the world's leading experts within this field. The congress is hosted by the International Association for the Study of Pain (IASP). The mission of IASP is to bring together scientists, clinicians, health-care providers, and policymakers to stimulate and support the study of pain and to translate that knowledge into improved pain relief worldwide.
- The Interdisciplinary World Congress on Low Back & Pelvic Girdle. Held every three years, this congress welcomes health care professionals, practitioners, academics, researches and policymakers from all continents. This forum aims to promote and facilitate interdisciplinary knowledge and to create a consensus on prevention, diagnosis and treatment of acute and chronic lumbopelvic pain.
- Meetings arranged by the International Spine Intervention Society (ISIS). ISIS is a multi-specialty physician association dedicated to the conscientious, evidence-based implementation of spine interventions to improve the quality of life of patients with spinal disorders.
- Meetings arranged by The International Conference on Case-Based Reasoning (ICCB). ICCBR is arranged annually and is the leading international meeting on case-based reasoning (CBR). It aims to promote research in CBR among researchers, practitioners and engineers of related disciplines.

- International Joint Conference on Artificial Intelligence (IJCAI) is the top-level conference intelligent systems models, algorithms and applications.
- IEEE International Symposium on Computer-Based Medical Systems (CBMS) has over many years established itself as one of the premier conferences in computational medicine, focusing on the link between academia and industry.
- Meetings arranged by the European Pain Federation (EFIC). EFIC represent Pain Societies from 37 European countries and close to 20,000 physicians, basic researchers, nurses, physiotherapists, psychologists and other healthcare professionals across Europe, who are involved in pain management and pain research.
- Meetings arranged by the European Public Health Association (EUPHA). EUPHA is an umbrella organisation for public health associations and institutes in Europe and has 71 members from 41 countries. The overall aim of EUPHA is to contribute to improved health and well-being and narrowing health inequalities for all Europeans.
- The International Conference on Case-Based Reasoning (ICCBR). ICCBR is arranged annually and is the leading international meeting on case-based reasoning (CBR). It aims to promote research in CBR among researchers, practitioners and engineers of related disciplines.
- The biannual conference on Artificial Intelligence in Medicine (AIME). AIME brings together researchers to present and improve the international state of the art of AI in Medicine from perspectives of theory, methodology and application.
- IEEE International Symposium on Computer-Based Medical Systems (CBMS) has over many years established itself as one of the premier conferences in computational medicine, focusing on the link between academia and industry.

### 3 Main target groups, their communities, and ways of communication

An effective and encompassing dissemination and communication strategy requires identification of relevant stakeholders and target groups for SELFBACK. Moreover, it is relevant to know where the target groups are communicating, which communities they are part of, and which channels they use. For the SELFBACK project, we have identified the following main stakeholders and target groups for dissemination and communication.

1. Patients with low back pain
2. The general public
3. The scientific community
4. Care providers and health professionals
5. Government bodies
6. Business partners

#### 3.1. Patients with low back pain and the general public

**Responsible: HLE, NTNU, SDU, GLA, NFA, RGU**

The most important target group is patients with non-specific acute, recurring, or chronic LBP. The second most important target group is the 'general public' of the European Union. Engaging end users is crucial in research and in product and service development, so throughout the project communicating to and with end users will become increasingly important.

Reaching the general public is done through using the EU channels for disseminating the results as well as through general media such as television, radio, and all other online and offline media. Targeting social media first can be very effective as journalists from the regular media are on social media themselves and pick up themes for publishing here. Fora used by patients can also be a place to connect to our main target group, for example:

<http://www.spine-health.com/forum/categories/lower-back-pain>.

#### 3.2. The scientific community

**Responsible partners: NTNU, SDU, GLA, NFA, RGU**

First and foremost, we will reach out to the scientific community by scientific publications, contact with academic and research communities, and presentations at conferences and events. Participation at scientific events will also allow collecting and evaluating feedback from target scientific audience in order to improve the project's visibility and impact.

Further, within the scientific community we will engage and contact influential people in the area of LBP as well as thought leaders within this area. Thought leaders, influential persons, and institutes that have authority, all have large networks than can be used to disseminate and communicate the results from the SELFBACK project. The following are examples of influential people/institutions in the field of LBP research and/or health technology that we already have contact with within the consortium

- Keele University, Institute for Primary Care and Health Sciences  
People: Nadine Foster, Jonathan Hill  
<http://www.keele.ac.uk/pchs/staff/professors/nadinefoster/>
- VU Amsterdam, Department of Health Sciences  
People: Maurits W van Tulder  
<http://www.emgo.nl/team/237/mauritsvantulder/personal-information/>
- The University of Sydney, Faculty of Health Sciences  
People: Manuela Ferreira, Paulo Ferreira  
<http://sydney.edu.au/health-sciences/about/people/profiles/paulo.ferreira.php>
- Harvard University, Harvard Medical School  
People: Robert N Jamison  
[http://physiciandirectory.brighamandwomens.org/details/980/robert-jamison-anesthesia\\_and\\_pain\\_management-chestnut\\_hill](http://physiciandirectory.brighamandwomens.org/details/980/robert-jamison-anesthesia_and_pain_management-chestnut_hill)
- Erasmus University, Nijmegen, the Netherlands.  
People: Alex Burdorf  
<http://www.erasmusmc.nl/public-health/organization/our-associate-professors-page/a-burdorf/>
- University College London IRIS, UK  
People: Elizabeth Murray  
<https://iris.ucl.ac.uk/iris/browse/profile?upi=EMURR90>
- Salesforce, San Francisco, US  
People: Mehmet H. Göker  
<http://www.goker.us/>
- Università del Piemonte Orientale A. Avogadro  
DISIT - Computer Science Institute  
People: Stefania Montani  
<http://people.unipmn.it/stefania/>

### 3.3. Care providers and health professionals in the field of LBP

#### Responsible partner: SDU, GLA, NTNU, RGU

This category includes care providers and health professionals such as general practitioners, physiotherapists, and chiropractors. Focus will be on thought leaders and influential persons and institutes that have authority and have a large community that can be reached. The following channels can be used to communicate with these care providers and professionals:

- Articles, scientific magazines, online publications
- Conferences and events targeted at general practitioners and physical therapists
- Online fora and Facebook channels, such as:
  - <http://www.spine-health.com/forum/categories/lower-back-pain>
- Social Media:
  - On Facebook, we will connect with and befriend influential care providers and/or researchers on a personal level and with their organizations and social media channels. The connection with these people is a continuous effort by all partners but must be initiated by the responsible persons for the social media channel

- All partners must engage followers to the SELFBACK Twitter and Facebook accounts, especially people and organizations with large networks, such as:
  - Influential health professionals and researchers on the subject of LBP and behaviour
  - Popular Facebook channels for health professionals, such as <https://www.facebook.com/lamPhysiotherapy>
- Professional organizations for health professional worldwide:  
We will use existing contacts with local and national organisations, connecting with them through face-to-face contacts, email, social media, and at conferences.
  - Physical therapists: <http://www.wcpt.org>
  - General practitioners: <http://www.globalfamilydoctor.com>
  - Chiropractors: <https://www.wfc.org/website/>

### 3.4. Government bodies

#### **Responsible partners: HLE, NTNU, SDU, NFA, GLA, RGU**

Government bodies and other local, national and European policy makers are relevant stakeholders, particularly towards the end of the project. The following will be targeted specifically:

- EU policy makers
- National and local governments of the target countries:
  - Denmark: Ministry of Health  
<http://www.sum.dk/English/The%20Ministry/Structure-of-the-Ministry.aspx>
  - Norway: Ministry of Health and Care Services  
<https://www.regjeringen.no/en/dep/hod/id421/>
  - United Kingdom: NHS  
<http://www.nhs.uk/conditions/back-pain/Pages/Introduction.aspx>

### 3.5. Business partners

#### **Responsible partner: HLE**

HLE will monitor the market for business opportunities and inform consortium members on the market situation for mHealth solutions for LBP. The communication with business partners is be an integral part of the business plan and IPR strategy that will be developed within the SELFBACK project. Below is a preliminary outline. A detailed plan will be defined in deliverables D6.2, Knowledge management plan (due M18), D6.3 Business plan (due M30). Possible targeted business partners:

- Technological platforms like Philips Health Suite, Microsoft Health Vault, etc.
- International investors in mobile healthcare technology

- Business development networks
- Large companies
- Insurance companies
- Governments

HLE will from the early stage of the project engage potential business partners. The communication will mainly be focused on personal contact with the most influential decision makers in their field. For this we will use social media, personal communication, the SELFBACK website, a brochure/teaser, etc.

This communication will be a continuous effort throughout the project with the aim to have an engaged and focused group of business partners during and after the project which will benefit the go-to-market strategy. As agreed in the consortium and grant agreement and related to the knowledge management plan in communicating with potential business partners IPR issues will be closely monitored and respected.

## 4 Guidelines for scientific publications and dissemination activities

The Grant Agreement between SELFBACK and the European Union emphasizes the importance of dissemination of results through its articles on Obligation to disseminate results (§29.1) and Open access to scientific publications (§29.2). The specific and detailed guidelines for publication within the SELFBACK project is described in chapter 3 and 4 in the Project Handbook (available in SharePoint).

### 4.1. Obligation to disseminate results (§29.1 in Grant Agreement)

Unless it goes against their legitimate interests, each beneficiary must — as soon as possible — disseminate its results by disclosing them to the public by appropriate means (other than those resulting from protecting or exploiting the results). Channels for dissemination of research results are typically scientific journals and presentations at scientific conferences. The Consortium Agreement further clarifies Dissemination of results in §8.4.

### 4.2. Ownership of results

The Grant Agreement specifies ownership of results in Article 26, separated in Ownership by the beneficiary that generates the results (§26.1) and Joint ownership by several beneficiaries (§26.2). Results are owned by the beneficiary that generates them. ‘Results’ means any (tangible or intangible) output of the action such as data, knowledge or information — whatever its form or nature, whether it can be protected or not — that is generated in the action, as well as any rights attached to it, including IPR.

### 4.3. Authorship policy

Authorship on publications and presentations will first and foremost adhere to standard ethical guidelines and be consistent with the relevant articles in the Grant Agreement and the Consortium Agreement. Authorship on scientific output will follow the recommendations given by the International Committee of Medical Journal Editors (ICMJE). Criteria and specifics from the ICMJE regarding authorship is outlined in the Project Handbook.

### 4.4. Open access to scientific publications (§29.2 in Grant Agreement)

As the Grant Agreement prescribes, SELFBACK will ensure open access to scientific publications (§29.2), i.e. peer-reviewed journal papers from SELFBACK will be openly accessible free of charge. Due to the current operating conditions of some of the major journals that are relevant, some articles might be "delayed" for open access, but will then at a later stage become available through the SELFBACK public website. The practical details regarding open access is specified in the Project Handbook

## 5 Annual evaluation of the communication results

### **Responsible partners: HLE**

The results of our communication activities can be measured in a variety of ways, such as number of hits on the project website, number of conference presentations, and number of followers on social media. The following specific metrics will be used to measure interest for the SELFBACK project:

- Website and page views
- Number of incoming links to the website
- Number of contact requests
- Facebook followers, likes and posts
- Tweets, retweets and DM's on Twitter
- Articles published
- Article quotes
- Interviews published
- Appearances on television and radio
- Number of accepted talks on conferences and events
- All other interest coming from stakeholders

A yearly evaluation of the results of all communication actions will be executed by HLE and NTNU.

## 6 Distribution of responsibility for implementation tasks and the agenda for actions

**Table 1: Planning and checklist throughout the project for all responsible partners.**

<b>Task</b>	<b>Subtask</b>	<b>Responsible</b>	<b>Status</b>	<b>Due</b>
<i>Dissemination</i>	Website maintenance	KIO		Ongoing
	Website content	KIO adds, NTNU, all partners deliver content	Publications, conferences, blog, news.	Ongoing
	Project visual and voice	KIO	Done	x
	Annual communication calendar update	HLE		Q4 2017
	Infographic	HLE		Q2 2017
	Template for presentation	KIO	Done	x
	Press releases	NTNU	One release in 2016	Ongoing
	Teaser	HLE	Done	x
	Brochure for general public	HLE		Q1 2018
<i>Publication record</i>	Recording of scientific publications	All scientific partners	Last publication posted xxx October	Asap after action
<i>Conferences</i>	TED and Exponential Medicine	HLE organise, implementation by partners		2018
	All other conferences	All partners	Report upcoming and visited conferences to NTNU	Ongoing
<i>Evaluation</i>	Annual evaluation of results of the communication	HLE	First evaluation due Q1 2017	Q1 of every year

## 7 Summary

The SELFBACK Project is a highly ambitious 5-year project with clear objectives. The consortium is aware of the importance of good communication between consortium partners and with all stakeholders involved to make this project a success. Communication is foremost a joint effort for all members. This plan will be distributed to all partners and results will be discussed in consortium meetings to keep awareness on this subject on a high level.

## 8 Appendices

### Appendix 1: Teaser selfBACK

**Introducing an evidence based, low cost and highly effective approach to manage non-specific low back pain**

**A business plan with a targeted commercialisation strategy**

The selfBACK technology will be commercialised along various routes, including licensing structures, set up of a specialised venture with a portfolio of multiple eHealth solutions and direct sales to consumers through selected e-health sales and platforms.

The business case consists of an effective, low cost and easy to implement and scalable solution compared to regular medical treatment. As an initial rough estimate of the predicted cost-benefit, we estimate that the total cost of implementing and using selfBACK range between 120-200 EUR per patient (including server for running the Decision Support System, activity detecting wristband, app and brief education to enable safe use of selfBACK). Costs of use of the selfBACK app amounts to a few euros and declines with scale as the technological possibilities get exponentially cheaper and better.

The stakeholders that benefit most from the savings depend on the organisation of the national healthcare system and are either insurance companies, corporates with large amounts of staff and governments (being large employers).

**Project planning and operational availability of the technology**

The aim of the project is to have a pilot for the randomised controlled trial from year 2 and onwards. Results will be available from 3 years to 5 years into the project.

Product development is anticipated to start in year 2 (2017) based on existing knowledge and assumptions on the research outcome. Central to the technology is the case based reasoning algorithm in a self-learning system providing a tailored advice to the individual. Early beta version product development is applied to analyse user interaction, technical requirements and interface design.

The product development uses three input channels: research results, new software and sensor technology coming to market and user input from early users of the beta-version.

**Opportunities for Partners**

The commercial management of the project are actively looking for corporate partners from the healthcare sector.

- (re-)insurance companies
- healthcare ICT platforms
- governments
- large companies
- healthcare professionals and institutes

We intend to start liaising with potential partners in the early stage of the project to be able to integrate stakeholder requirements into the product offering.

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**Introducing an evidence based, low cost and highly effective approach to manage non-specific low back pain**

**Low back pain, troublesome for many and with high social and economic costs**

Low back pain (LBP) is the most significant contributor to disability in Europe and is the fourth most common diagnosis seen in primary care (after upper respiratory infection, hypertension, and coughing). More than 85% of LBP patients seen in primary care have non-specific LBP (i.e., pain that cannot reliably be attributed to a specific disease or pathology). Self-management in the form of physical activity and strengthening exercises constitutes the core component in the management of non-specific LBP; however, adherence to self-management is highly challenging due to lack of feedback and reinforcement.

The course of LBP is closely associated with the patient's behaviour and the mind-set about own illness. Helping consumers to change behaviour and mind-set with personalised feedback tailored to their symptom profile and progress is the main objective of the technology that will be developed in the selfBACK project.

In the selfBACK consortium, leading European experts in physiology, artificial intelligence and human behaviour work together to develop an innovative technological solution to empower people with non-specific LBP to improve their self-management, thereby reducing the risk of recurrence and disability.

**selfBACK is part of a large technological development towards preventive medicine**

Gartner predicts that within 5 years the use of smartphones, smart watches, and smart sensors for use in preventive or obstructive health measurements and feedback will reach the 'slope of enlightenment' and is expected to be widely used by consumers. The US think-tank, Singularity University predicts that these new possibilities for self-management of disease and illness will empower patients and be potentially disruptive to the entire healthcare industry.

**Project consortium goal and technology**

selfBACK is a 5 million EURO EU Horizon 2020 financed project that aims to develop a decision support system that will be used by the patient to facilitate, improve and reinforce self-management of LBP. Specifically, selfBACK is designed to assist the patient in deciding and reinforcing the appropriate actions to manage his or her own LBP, after initially consulting a health care professional.

The decision support will be conveyed to the patient via a smart-phone app in the form of advice for self-management. The advice is being tailored to each patient based on the symptom state, symptom progression, the patients goal-setting, and a range of patient characteristics including objective information from a physical activity-detecting wristband worn by the patient. Based on the comparison with similar patient cases and their results, sophisticated algorithms design a plan that is tailored to the patient's symptom progression and goal-setting.

In the second part of the project the consortium will evaluate the effectiveness of selfBACK in a multi-national randomised controlled trial using pain-related disability as primary outcome. It is foreseeable that patients who use selfBACK will have a 20% reduction in pain-related disability at 9 months' follow-up compared to patients receiving treatment as usual. Process evaluation will be carried out as an integrated part of the trial to document the implementation and map the patients' satisfaction with selfBACK.

Fig 2: Overview of the selfBACK decision support system.

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**Development and execution by a highly reputable and interdisciplinary group of experts**

The selfBACK project comprises a unique group of top European experts with the required complementary and interdisciplinary skills, under the leadership of Prof. Paul Jarle Mork, Norwegian University of Science and Technology (NTNU). Renowned specialists in physiology, case-based reasoning, patient motivation, user-centred mobile application development, and commercialisation are focused on creating an evidence-based technology that fulfil consumer and user requirements for usability as the main objective.

The selfBACK team constitutes the following members:

- Prof. Paul Jarle Mork of the Dept. of Public Health and General Practice, NTNU, will lead and coordinate the project.
- Dr Kerstin Bach of NTNU's Intelligent Systems Group, will be responsible for defining the data infrastructure, including the structure and formats for data knowledge storage and communication.
- Dr Nimisha Witsenburg of the Robert Gordon University (UK), is responsible for dashboard monitoring and analysis of the selfBACK system.
- Prof. Agnar Aarholt of NTNU's Intelligent Systems Group, is experienced in case-based reasoning research and will lead the development of the decision support system providing personalised advice for patient self-management.
- Dr Mihel Manago of Kiofos SA (IT) will develop the user interaction through a smartphone app and web-based dash board underpinning the patient self-management.
- Prof. Karen Sogaard of the University of Southern Denmark will be responsible for evaluating the effectiveness of selfBACK in a randomised controlled trial and the process evaluation of the trial.
- Peter Vermeiren of Health Leads BV (NL), is responsible for innovation management of the selfBACK results and contact person for corporate collaboration.

There are currently some 285 Apps directly or indirectly targeting musculoskeletal pain. None of these offer a thorough evidence based approach as being developed in the selfBACK project. This is a unique selling point that is convincing to both general practitioners as well as physiotherapists in its positioning as a self-management tool to prescribe to patients. In order to accelerate their improvement in function and well-being. Moreover, there is a large financial incentive in delivering the app to consumers for insurance companies, companies with a large workforce and governments.

**Potential markets**

As an example the potential market was calculated for the adult Norwegian population of about 4 million persons. Each year about 1 in 15 persons consult their general practitioner with LBP while in addition some directly consult their physiotherapist or chiropractor. This conservative estimate equals to about 265.000 people of which more than 85% will have non-specific LBP, i.e. about 225.000 people. The smartphone penetration in Norway is currently around 75% and is expected to approach 80-85% by 2020. About 180.000 people who consult a GP, PT, or ChP with non-specific LBP thus have a smartphone.

Extrapolating the above mentioned parameters to the combined European (740 million) and US (320 million) population with a similar smartphone penetration, the potential annual market size is tentatively estimated at 81 million people.

Cost of illness studies in different European countries (Sweden, Belgium, Netherlands, UK) indicate that the total annual cost of LBP per capita ranges between 118 EUR and 399 EUR, amounting to a total annual cost in Europe between 88 billion EUR and 291 billion EUR (equals approximately 0.4 - 1.2% of the gross domestic product in the European Union).

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Appendix 2: Presentation templates



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