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## PREventive Care Infrastructure based on Ubiquitous Sensing

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### **D6.1 Preliminary dissemination and exploitation report**

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### **Abstract**

This document presents the planned dissemination and exploitation activities in PRECIOUS. An overview of progress against the dissemination plan is also presented. Targeted dissemination activities are vital to ensure the impact of PRECIOUS outputs. A range of activities are planned, which aim to deliver appropriate content to key stakeholders. Exploitation activities will take place both during, and following the completion of, PRECIOUS. It is expected that both the consortium and the wider public will benefit from PRECIOUS.

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## List of Acronyms

AALTO: Aalto University

AB: Advisory Board

CVD: Cardiovascular disease

EC: European Commission

FP7: Seventh Framework Programme

ICT: Information and Communications Technology

IMT: Institut Mines-Telecom

PRECIOUS: PREventive Care Infrastructure based On Ubiquitous Sensing

SMEs: Small and medium enterprises

UNIVIE: University of Vienna

VHIR: Vall d'Hebron Research Institute

WP: Work Package

## **1. Executive summary**

This preliminary report outlines the planned dissemination and exploitation activities in PRECIOUS. An update on progress against planned dissemination activities is also provided.

PRECIOUS dissemination actions aim to communicate project activities and results to a wide audience, which includes industry, academia, government bodies, and the general public. It is expected that PRECIOUS will generate innovations that can be applied by industry and result in successful patents.

The following dissemination activities are planned and presented in this document in detail: website and social media, press releases, project leaflet, bi-annual newsletter, conference posters and presentations, journal articles (peer review and trade), attendance at non-academic events, PRECIOUS workshops and seminars, a PRECIOUS demonstration event, and interaction with other projects and forums. These activities will involve all project partners, who will also carry out their own dissemination activities.

Exploitation activities will be carried out both during and after the project. These activities will aim to capitalise on acquired knowledge and project results, concerning preventive healthcare systems. The project will increase understanding of comprehensive, user-friendly, healthcare systems that can have both scientific and commercial value. Such systems can also impact at individual, as well as societal, levels.



## 2. Preliminary Dissemination Report

### 2.1. Dissemination plan

#### 2.1.1. Introduction

The consortium will employ a range of means to disseminate PRECIOUS concepts and results. These will include an online presence, oral and poster presentations, written publications, active contributions to research forums, and workshops involving key stakeholders. These dissemination activities will take place in accordance with the PRECIOUS Consortium Agreement, and protect any commercially sensitive material.

The purpose of this document is to present the dissemination plans in detail, listing foreseen activities. The WP leader (UNIVIE) is responsible for ensuring that the consortium carries out these activities as well as recording any achieved independently. This dissemination plan is a working document, that is, the plan will be updated regularly to reflect appropriate dissemination activities during the lifetime of the project. Still, the goals will remain valid and the consortium, as a whole, is responsible for implementing them.

#### 2.1.2. Stakeholder engagement

In order for the project to be successful, dissemination to key stakeholders is vital. These stakeholders will help shape PRECIOUS through various feedback opportunities during the project, and will also ensure the lasting impact of PRECIOUS following its culmination.

##### 2.1.2.1. Stakeholder analysis

During the first consortium plenary meeting, conducted in April 2014, a session was held in order to identify and prioritise stakeholders and plan dissemination activity to these key players. To achieve this, the consortium organised a “Message Mapping Session” with the aims of: identifying key stakeholder groups, outlining the “take out” message for each group, predicting the current perception of the stakeholder group, that is, their perception of our proposition (PRECIOUS), listing the content that will be used to present our message, and stating the channels that will be used to deliver this content.

The following stakeholder groups were identified during this session:

- End users
- Media
- Software developers
- Health professionals
- Public healthcare organisations
- Policy makers
- Consumers / Patients / Patients’ associations
- SMEs / Providers
- Researchers

In a second phase, the different groups were prioritised and sorted in descending order:

1. Consumers
2. Health professionals
3. SMEs / Providers / Software developers

A different dissemination strategy will apply to each group, resulting in the "Message Map" shown in Table 1. This table is intended to reflect the stakeholders who were identified as key priorities by the consortium; however, the same type of detailed analysis will take place for all of the groups in due course. A separate communication strategy will also be developed that will address strategies to engage stakeholders. These dissemination and communication strategies will be discussed, reviewed and adapted during monthly consortium teleconferences.

**Table 1: Stakeholder "Message Map"**

Priority	Stakeholder group	The Take Out Message	Current perception: level of difficulty	Making the shift: content / channels / targets
1	Consumers	<p><i>Engagement:</i> contribute to the design of PRECIOUS by communicating requirements and giving feedback</p> <p><i>Action:</i> use PRECIOUS to improve lifestyle, diet and well-being</p>	<p>Currently unaware of PRECIOUS</p> <p>How can we reach them?</p>	<p><u>Content</u></p> <p>Case studies/examples</p> <p><u>Channels</u></p> <p>Traditional media</p> <p>PRECIOUS website/social media</p> <p>Online forums</p> <p>Workshops</p> <p>Women's and men's magazines</p>
2	Health Professionals	<p><i>Awareness &amp; understanding:</i> understand that PRECIOUS is a science-based system and that it can improve the quality of life of their patients</p> <p><i>Advocacy:</i> recommend PRECIOUS to their patients</p>	<p>Currently unaware of PRECIOUS</p> <p>May be negative if the PRECIOUS approach does not fit with their common practices</p>	<p><u>Content</u></p> <p>Research evidence</p> <p>Reports</p> <p><u>Channels</u></p> <p>Conferences/Webinars</p> <p>Peer review literature</p>

				Professional literature/magazines PRECIOUS website Direct communication Workshops
3	SMEs / Providers / Software developers	<i>Engagement:</i> explain how they would use PRECIOUS to generate business, and describe their technical requirements  <i>Action:</i> link their sensors, applications etc to the PRECIOUS system	Most are neutral at this stage. They are likely to use other platforms/have their own platform and will need to be convinced by PRECIOUS	<u>Content</u> Case studies/examples Research evidence <u>Channels</u> Direct communication Trade shows Tech-healthcare magazines Workshops PRECIOUS website/social media

The consortium has also identified a number of health organisations, through which health professionals and consumers can be targeted. Health professionals may be approached through connections to official social media pages, email and telephone or at appropriate events/workshops. Consumers often interact via forums hosted by these health organisations, which may provide an opportunity for PRECIOUS to engage with potential end users and understand their health concerns. The following list of organisations has been identified, and will be updated throughout the project:

- <http://www.afdn.org/> - AFDN - Organisation of nutrition professionals
- <http://www.afd.asso.fr/> - AFD - French association of diabetics
- <http://www.fedecardio.org/> - FEDECARDIO – French association to fight cardiovascular diseases
- <http://alimentation.gouv.fr/> - French government web portal about food
- <http://www.sante.gouv.fr/> - Public Health France
- <https://www.gov.uk/government/organisations/public-health-england> - Public Health England
- <http://www.scotphn.net/> - Scottish Public Health Network
- <http://www.publichealth.hscni.net/> - Public Health Agency for Northern Ireland
- <http://www.wales.nhs.uk/> - Public Health Wales
- <https://www.diabetes.org.uk/> - Diabetes UK
- <https://www.bhf.org.uk/> - British Heart Foundation
- <https://www.bda.uk.com/> - British Dietetic Association
- <http://www.nutrition.org.uk/> - British Nutrition Foundation
- <http://www.thl.fi/> - National Institute for Health and Welfare (THL) Finland
- <http://www.ttl.fi/> - Finnish Institute of Occupational Health (FIOH)

#### 2.1.2.2. PRECIOUS Advisory Board

The creation of an Advisory Board (AB) is a key strategy for the engagement of stakeholders. All partners will invite influential stakeholders, in their field, to participate. The AB will consist of approximately 5-10 members. The AB will be consulted via email and Skype throughout the project to ensure that activities and outputs remain relevant. AB members will also be invited to attend face-to-face meetings as well as project workshops and seminars.

The following individuals have been invited to the advisory board:

**Dr. Falko Sniehotta**

Dr Sniehotta is Reader in Health Psychology at Newcastle University. He is president of the European Health Psychology Society, Associate Editor of Health Psychology Review, and member of the editorial boards of the Annals of Behavioral Medicine, Psychology & Health and the British Journal of Health Psychology (<http://www.ncl.ac.uk/ihp/people/profile/falko.sniehotta>).

**Dr. Joan Colom**

Dr. Colom is deputy director of the Public Health Agency of Catalonia, and Research and Innovation manager. The Public Health Agency belongs to the Health Department of the Government of Catalonia (<http://www20.gencat.cat/portal/site/salut/menuitem.81a4919118f3026913a90f10b0c0e1a0/?vgnextoid=afc125837e73f310VgnVCM2000009b0c1e0aRCRD&vgnnextchannel=afc125837e73f310VgnVCM2000009b0c1e0aRCRD>).

Additional members will be invited in due course.

## 2.2. Dissemination routes

A variety of dissemination routes will be required to reach the diverse range of stakeholders, which have been identified. Therefore, in addition to the AB and interaction through health organisations, the following dissemination routes are planned.

### 2.2.1. *Written and printed material*

#### 2.2.1.1. Website and social media

A project website is available at [www.thepreciousproject.eu](http://www.thepreciousproject.eu) and will be used as one of the main vehicles of dissemination and interaction with the public seeking information about PRECIOUS. The website is structured into the following pages: *Home, News Vision, Partners, Publications, Contact* and *Consortium Area*. The 'Consortium Area' pages are password protected (intranet) and will be used as a tool of communication between the partners. All partners have editor-level access for this section of the website.

The public sections of the website are managed by the project co-ordinator; however, all consortium members are responsible for suggesting revisions and contributing to its contents (via the co-ordinator). In addition to providing general information about the project, such as plenary meeting updates, project milestones and links to existing systems and products, the website will be used as the main vehicle to disseminate public deliverables, as well as other reports the project may publish. This content will be made available under the 'Publications' section.

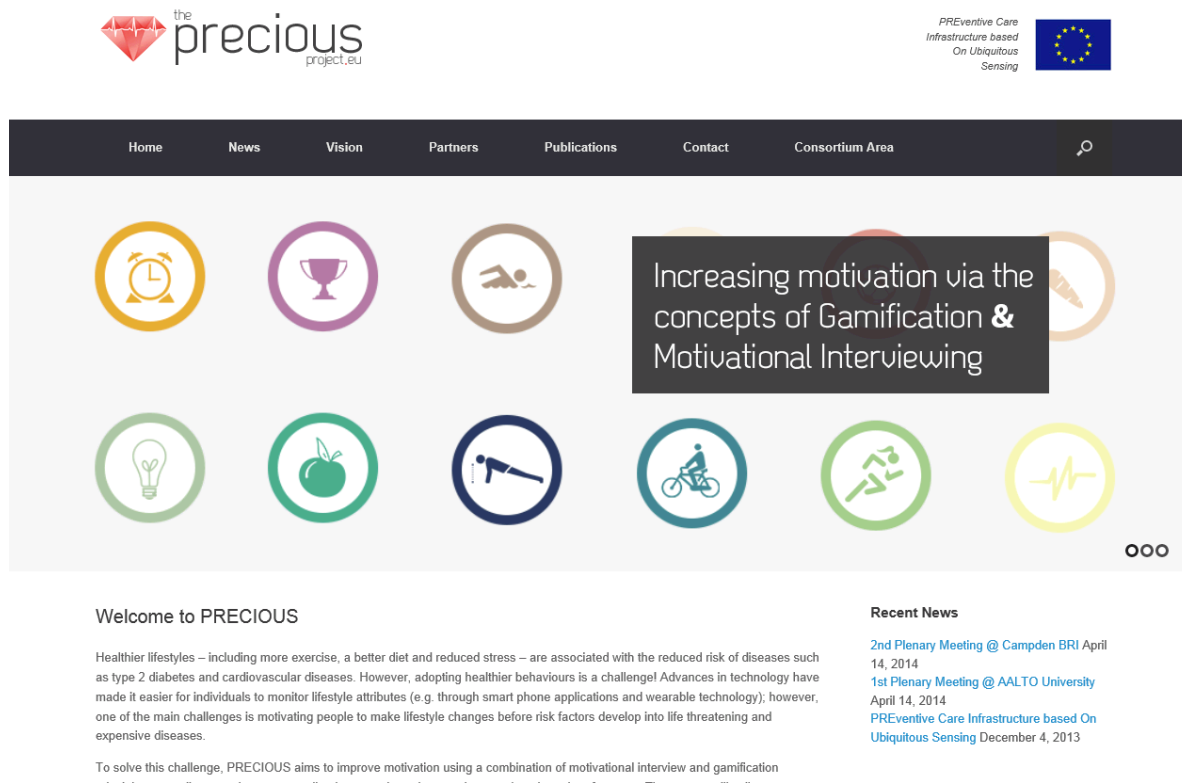


Figure 1: [www.thepreciousproject.eu](http://www.thepreciousproject.eu)

Social media channels, for example Twitter, Facebook and LinkedIn, will help to extend dissemination of project activities and results and, in particular, engage the general public and some media. Consortium members will also investigate the use of their websites and social media networks to highlight project progress, upcoming events and publications.

#### 2.2.1.2. Press releases

Press releases will be prepared to disseminate key project achievements. These are likely to include:

- Publication of 'PRECIOUS vision' diagram – an overview of the multi-disciplinary nature of the project and its aims
- Presentations at conferences
- Arrangement of PRECIOUS workshops/other events
- Development of a prototype system
- Results of efficacy studies

The press releases will be sent to journalists, for example via press release portals, and will be translated into local language as appropriate.

#### 2.2.1.3. Leaflet and presentation slide set

A leaflet describing PRECIOUS will be prepared and published on the 'Publications' area of the website. A second release will be published towards the end of the project.

A presentation PowerPoint, introducing the PRECIOUS vision on future network technologies, key developments undertaken in the project, and the reasons why these developments are strategic, will be prepared. These slides will be published on the 'Publications' area of the website.

2.2.1.4. Newsletter

A PRECIOUS newsletter is planned and will be issued twice a year, describing progress. The newsletter will be distributed by email to the consortium, AB, EC, and other parties who subscribe to it by registering online. The consortium will circulate the newsletter amongst their contacts. A PDF copy of the leaflet will also be added to the public pages of the website. A link to this PDF will be posted on social media accounts.

The newsletter will contain several sections: *Editorial*, *In the spotlight*, *Progress and achievements*, *News from the partners*, and *Upcoming events*:

- The *Editorial* will be written by the project co-ordinator;
- *In the Spotlight* will present the activities of a given work package (WP) in more detail (on a rotating basis);
- *Progress and achievements* will give a short progress report on the main developments in WP;
- *News from the Partners* intends to present closely related activities occurring at partners' organisations;
- *Upcoming events* will promote future events, including project activities.

Table 1: Newsletter schedule

Date of release	Editorial	In the Spotlight	Progress and achievements	News from the partners	Upcoming events
May 2014	AALTO	WP2	Each WP leader to provide a summary of progress	Each partner to provide details of any closely related activities	Highlighting upcoming events
Nov 2014		WP3			
May 2015		WP4			
Nov 2015		WP5			
May 2016		WP6			

2.2.1.5. Publication of journal articles

The publication of papers is an important way to disseminate scientific knowledge, and PRECIOUS will also follow this approach. Many PRECIOUS partners, especially the academic partners, are planning to present papers at conferences (poster and oral contributions) and publish papers in selected peer-review journals. Given the lifespan of the project, it is likely that results will first be presented at conferences, and then, later on, in journals, presenting a more complete description of models and results.

The major peer-review journals being targeted are:



- IEEE Transactions on Networking
- IEEE Journal of Biomedical and Health Informatics
- Telemedicine and e-Health
- Games for Health Journal
- Health Psychology
- Psychological Medicine
- European Journal of Medical Research

This list will be updated throughout the duration of the project.

Trade journals (e.g. Food Science and Technology Journal) and professional magazines (e.g. Diabetes Update) are a useful channel for project dissemination to a wider audience (such as industry and health professionals), and therefore opportunities to contribute articles in relevant publications will be sought.

### 2.2.2. Events

To increase networking opportunities, the PRECIOUS consortium will seek a presence at major events in the areas of future networks, gamification, healthcare, nutrition and psychology. Events targeted will include academic conferences, non-academic forums and industry trade shows. The consortium will also organise events, such as workshops, seminars and a demonstration event.

#### 2.2.2.1. Poster and oral presentations at academic conferences

The project aims to target a carefully selected subset of major conferences in the field, for example:

- Institute of Electrical and Electronics Engineers (IEEE) INFOCOM
- IEEE PerCom
- IEEE SECON
- IEEE WoWMoM
- IEEE Healthcom
- Association for Computing Machinery (ACM) SIGCOMM
- ACM MobiCom
- ACM MobiHoc
- ACM CoNext
- ACM MobiOpp
- International Communication Association (ICA) conference
- International Federation for Information Processing (IFIP) Networking
- International Digital Health Conference
- International Conference of Motivational Interviewing (ICMI)
- European Public Health Conference (EUPHA)
- World Congress on Public Health
- Conference of the European Health Psychology Society
- International Congress of Behavioural Medicine

- World Congress of Food Science and Technology
- Mobile World Congress

#### 2.2.2.2. Presence at non-academic events

The PRECIOUS partners will seek to attend events organised by national governments, local authorities, and other international institutions focused in areas such as:

- eHealth
- Diet and health e.g. Westminster Food & Nutrition Forum events
- Public health
- New technologies and health
- Health psychology

Opportunities to interact with the technology industry, and potential investors, will also be sought. In particular, the consortium will consider attendance at technology trade shows such as:

- Consumer Electronics Show (CES)
- Mobile World Congress
- Gadget Show Live

This list will be updated throughout the duration of the project.

#### 2.2.2.3. PRECIOUS workshops and seminars

Two workshops will be organised by PRECIOUS, that is, one after Month 18 (Apr 2015), and one after Month 30 (Apr 2016). These workshops will be based on demonstrations and present project results. Information concerning the workshop will be made public via the project website, newsletter and social media.

Ideally, these workshops will be co-located with project face-to-face meetings, in order to maximise attendance of consortium members. Moreover, the members of the AB will be invited to participate and provide their feedback.

Partners will also organise local workshops, seminars and other opportunities to present project information, such as:

- Seminars and workshops that bring together academics and industry (University of Vienna & IMT)
- Presentations for the general public and local media (IMT)
- Dissemination of project results at Member Interest Groups (Campden BRI)
- Dissemination of project results at seminars and workshops for health professionals and end users (Hospital Universitari Vall d'Hebron)

#### 2.2.2.4. PRECIOUS demonstration event

PRECIOUS will promote and prototype some technologies developed within the project. Public demonstration of these technologies will be organised towards the end of the project, when the prototype devices are ready. Opportunities to invite the media will also be sought.

This event will take place the day before, or after, the final EC review meeting, which is scheduled to take place at VHIR, Barcelona (ES).

### 2.2.3. *Scientific exchange*

#### 2.2.3.1. Interaction with other European Commission-funded projects

PRECIOUS will actively seek links and interaction(s) with other EC-funded projects in the areas of future networks, sensors, preventive health and personalised health.

Currently, the following projects have been identified, and will be approached to discuss sharing of disseminated materials, for example project newsletters, and the possibility of developing collaborative dissemination activities, such as joint workshops:

- QualiFY, grant agreement number: FP7-613783<sup>1</sup>
- SPLENDID, grant agreement number: FP7-610746<sup>2</sup>
- SimpleSkin, grant agreement number: FP7-323849<sup>3</sup>
- Internet of Things – Architecture, grant agreement number: FP7-257521<sup>4</sup>
- BUTLER, grant agreement number: FP7-287901<sup>5</sup>

It is expected that additional projects will be identified throughout the duration of PRECIOUS, and this document updated accordingly.

In addition to disseminating information, this activity will allow consortia to seek synergies with each other, and exploit opportunities for future research or business ventures.

### 2.2.4. *Individual partner dissemination activities*

#### 2.2.4.1. Aalto

Aalto has established the Health Factory organisation<sup>6</sup>, which provides a framework for various SMEs, hospitals and societal players in the Helsinki area. PRECIOUS will organise a joint workshop with the Aalto Health Factory to promote incubation of new preventive care associated services and SMEs. PRECIOUS will also organise joint courses with Aalto and SMEs in the Helsinki area to promote preventive care related technologies and business concepts.

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<sup>1</sup> <http://www.qualify-fp7.eu/>

<sup>2</sup> <http://splendid-program.eu/>

<sup>3</sup> <http://www.simpleskin.org/>

<sup>4</sup> <http://www.iot-a.eu/public>

<sup>5</sup> <http://www.iot-butler.eu/>

<sup>6</sup> [http://elec.aalto.fi/en/research/health\\_factory/](http://elec.aalto.fi/en/research/health_factory/)

#### 2.2.4.2. Campden BRI

Campden BRI provides technical support to the food, drinks and allied industries, serving 2,000+ member companies and other clients in 65+ countries. Campden BRI hosts regular on-site meetings with membership companies (Member Interest Groups), which offer the opportunity for presentation of on-going projects and group discussion. These meetings will provide a platform to update the food industry on PRECIOUS results, and receive feedback. Presentation of results to at least three meetings will be sought (e.g. Winter 2014, Winter 2015 and Spring 2016). Campden BRI can also disseminate information via its targeted Newsfeeds; members opt-in or out based on their interests. The 'Diet, Health and Nutrition' Newsfeed will be used to disseminate important updates regarding food intake, as well as overall progress. On-site training and conference facilities will also be used to host seminars/workshops for further dissemination of PRECIOUS outputs to key stakeholders.

#### 2.2.4.3. EuroFIR AISBL

EuroFIR AISBL is an international, member-based, non-profit Association with individual and institutional members including dietitians, food manufacturers, software developers, public-sector funding bodies, regulators and academia. Members have access to EuroFIR's newsletter where on-going projects and the related results are presented. Participation in a wide variety of events (e.g. CommNet BioFora) will provide opportunities to disseminate information about PRECIOUS. Besides its membership, EuroFIR AISBL also has an extensive mailing list with more than 2000 contacts and a website for disseminating information globally. Recently, EuroFIR AISBL created a Technical Working Group for its members. The aim of this group is to coordinate and advise on development and management of EuroFIR ICT systems as well as the long-term ICT strategy for EuroFIR to ensure compatibility and consistency in EuroFIR systems. It was agreed at the EuroFIR Working Groups' meeting that PRECIOUS activities would be integrated into this group to promote the exchange of views that can help with future development.

In addition, EuroFIR is a beneficiary in QuaLiFY (Grant no. 613783), which aims to utilise knowledge from previous Framework Programmes, and create new approaches for improving the health of EU citizens. A complementary group of SMEs is involved in (1) quantification of food intake and composition, (2) self-quantification technologies for genotype, phenotype and nutritional status, (3) data handling and personal advice IT tools, (4) production and provision of personalised dietary advice services and (5) innovative business development. QuaLiFY will create a solid basis to launch commercially viable products and services in the area of personalised dietary advice by providing a knowledge infrastructure and harmonised open innovation protocols. Beneficiaries from these consortia will review possible synergies between these projects over the coming months.

#### 2.2.4.4. Firstbeat

Results from PRECIOUS will be published via the company's distribution channels, and in related activities, such as newsletters, partner newsletters, and seminars. Firstbeat will participate in writing scientific publications with other consortium partners. Dissemination through publications will target high quality, peer reviewed journals in the health and wellbeing domain.

#### 2.2.4.5. The University of Helsinki

The University of Helsinki will focus its dissemination activities on journals and conferences relevant to preventive health and the use of technologies to support this. More specifically, the publications will be related to the building of psychological foundations for the PRECIOUS system, e.g. exploring the self-regulatory and motivational techniques, and the applicability of a gamification for behavior change. Publications are planned in the fields of neurosciences, as the laboratory experiments with psychophysiological measures will be conducted to detect the changes in, for example, brain responses and skin conductance, which are objective indicators of approach/avoidance motivation. Study findings will be discussed with local partners in biweekly health psychology research seminars and in collaboration with the Helsinki Institute for Information Technology (HIIT) findings will be integrated into teaching of information technology of social psychology. The research group will collaborate Helsinki Think Company (City of Helsinki and University of Helsinki) for dissemination of research results. The research group will arrange the annual Finnish Social Psychology meeting in 2014 where the theme will be technology and social psychology.

#### 2.2.4.6. Hospital Universitari Vall d'Hebron – Institut de Recerca Vall d'Hebron

The scientific dissemination of VHIR will focus on participation in target international conferences and specific publications in peer-reviewed journals. Moreover, the newsletter and VHIR website will be used to post PRECIOUS-related events and disseminate results. Additionally, seminars and workshops for interested hospitals, universities and industry partners will be carried out.

#### 2.2.4.7. Institut Mines-Telecom

The scientific dissemination of IMT will focus on participation in target international conferences and specific publications in peer-reviewed journals. Additionally, the living lab, Experiment'HAAL, will be also used as a show room for demonstrations and communication to the general public and to SMEs. Moreover, since IMT is a graduate engineering school, the project-based learning pedagogical method implemented at IMT is important. We will use the benefits of PRECIOUS to promote preventive care technologies and the business concepts in teaching.

#### 2.2.4.8. UNIVIE

The scientific dissemination activities of UNIVIE will focus on high-quality publications in appropriate top-level international conferences and/or journals, with an emphasis on significant research results in the areas of gamification approaches in preventive care, semantic technologies for sensor data, and economic modeling (including Quality of Experience) for eHealth scenarios. Further dissemination activities are planned especially within the Austrian eHealth community, for instance the organization of a tutorial event for interested industry partners. Project activities and results will also shape related teaching activities, including related seminars and Masters Theses.

### 2.2.5. Summary

Dissemination of PRECIOUS concepts, results and systems is vital to the success of the project. Various channels will be used to reach a diverse group of key stakeholders, which includes industry, academia, health networks and the general public. Early dissemination activities will include creation of a project website and social network accounts, production of a project leaflet and a targeted media presence. During the project, activities will include release of a bi-annual newsletter, presentation of results at conferences, publication of articles in trade press, delivery of workshops and seminars, and interaction with other FP7 projects. If achievable, it is expected that preparation of articles for submission to journals will take place towards the end of the project. Additionally, a project leaflet will be released at the end of the project, and reports will be made available publically via the project website.

## 2.3. Progress against Dissemination Plan

### 2.3.1. Introduction

This section of the report provides details of the progress made against the dissemination plan during the period 1st November 2013 to 1<sup>st</sup> April 2014.

### 2.3.2. Stakeholder engagement

#### 2.3.2.1. Stakeholder analysis

A stakeholder analysis was carried out at the consortium plenary in April 2014. The following were identified as priority stakeholder groups and a “Message Map” was created to understand how to communicate with these groups:

1. Consumers
2. Health professionals
3. SMEs / Providers / Software developers

#### 2.3.2.2. Advisory Board

Each partner has submitted the name of at least one potential Advisory Board member to the project co-ordinator. The co-ordinator will invite potential members to join the PRECIOUS advisory board. Consortium partners may also approach individuals to have an informal discussion about PRECIOUS and their potential role on the Advisory Board.

### 2.3.3. Communication

#### 2.3.3.1. Website and social media

The consortium has created various public channels for the dissemination of PRECIOUS activities and results, as well as related content.

The website (<http://www.thepreciousproject.eu/>) has both public and private-access pages. The private section of the website (‘Project Material’) can be accessed by all consortium

partners, and is used for posting of key documentation by work area. The public sections of the website are managed by the project co-ordinator. Currently, the following information is available:

- A news section to highlight recent outputs e.g. plenary meeting images
- Project contact details (including email address and links to social media accounts)
- Consortium partner details (partner website links and key people)
- Project overview and vision
- Project leaflet and project presentation

Public Twitter, LinkedIn and Facebook accounts have also been created and can be accessed via the following links:

- Twitter: @EU\_Precious<sup>7</sup>
- LinkedIn: the PRECIOUS project<sup>8</sup>
- Facebook: thepreciousprojecteu<sup>9</sup>

In addition, tools such as the Facebook 'Like' button are included on the project website within the 'Contact' section. The value of additional social media channels will be investigated, and further accounts may be created throughout the project.

#### 2.3.3.2. Leaflet and presentation slide set

A leaflet describing PRECIOUS was prepared, and posted on the 'Publications' area of the website in January 2014.

A presentation PowerPoint, introducing the PRECIOUS vision on future network technologies, key developments undertaken in the project, and the reasons why these developments are strategic, has been prepared. The slides were posted on the 'Publications' area of the website in January 2014.

#### 2.3.3.3. Newsletter

A newsletter template has been created and content is being prepared for the May 2014 edition. A PDF version of the newsletter will be published on the PRECIOUS website. A link to this will be posted on the Twitter, LinkedIn and Facebook pages. Consortium partners will also distribute the newsletter amongst their contacts.

#### 2.3.3.4. Publication of journal articles

The preparation of a project position paper, which will describe the project scope and objectives, has been initiated. The multi-disciplinary nature of PRECIOUS will be described in this paper.

Proposed topics for inclusion are:

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<sup>7</sup> [https://twitter.com/EU\\_PRECIOUS](https://twitter.com/EU_PRECIOUS)

<sup>8</sup> <http://www.linkedin.com/groups/PRECIOUS-project>

<sup>9</sup> <https://www.facebook.com/thepreciousprojecteu>



- Overall project vision (to include a diagram)
- User requirements
- Sensors, ubiquitous networking and semantics
  - Food intake and analysis
- Virtual individual modelling
- Motivational interviewing strategies and techniques, and gamification
- Socio-economic aspects

Platforms for the distribution of this paper are currently being explored.

#### 2.3.4. Events

##### 2.3.4.1. Poster and oral presentations at academic conferences

Campden BRI submitted a poster/oral presentation abstract to the 17<sup>th</sup> World Congress of Food Science and Technology & Expo on 27<sup>th</sup> February 2014. A response is expected in April 2014; the conference will be held on 17<sup>th</sup>-21<sup>st</sup> August 2014.

*Title:* Development of a preventive healthcare system to promote healthy lifestyles: measurement of food intake

A copy of the submitted abstract can be found in **Appendix I**.

VHIR submitted a poster abstract to the International Conference on Motivational Interviewing, which has been accepted. The conference will be held on 16-18<sup>th</sup> June 2014.

*Title:* Integrating motivational techniques in gamification systems for behaviour change: PRECIOUS

A copy of the submitted abstract can be found in **Appendix II**.

##### 2.3.4.2. PRECIOUS workshops and seminars

In March 2014, EuroFIR hosted a scientific symposium “Better Food Data and Tools to Support Food Health Research, Labelling and Health Claims in Europe”. PRECIOUS was presented at this symposium, which brought together food and health experts from academia and research centres across Europe providing an excellent opportunity to disseminate the project among different organisations.

#### 2.3.5. Summary

To date, dissemination activities have focussed on the identification of key stakeholders and preparing the platforms through which the consortium will disseminate project outputs. In particular, an online presence has been formed (project website and social media), the project outline published in the form of a leaflet and PowerPoint presentation and partners have begun to submit conference abstracts and publicise PRECIOUS.



Dissemination activities will increase as the PRECIOUS aims and objectives are realised (e.g. list of user requirements, prototype system, and prototype food intake sensor). A communication strategy will be developed to ensure that all PRECIOUS stakeholders receive useful information through the appropriate channels. During the coming months, the Advisory Board will be formed, and the first PRECIOUS newsletter (May 2014) and the position paper published.

### 3. Preliminary Exploitation Report

#### 3.1. Exploitation plan

##### 3.1.1. Introduction

PRECIOUS aims to provide a preventive care system that will promote healthy lifestyles. To achieve this, the PRECIOUS consortium combines expertise from a range of organisations (research institutes, universities and commercial partners), and across multiple disciplines, including health ICT, sensor technology, wellness technologies, nutrition, and psychology. During the project, the consortium will exploit their combined expertise to deliver the project aims, and seek opportunities to disseminate their contributions. Following project completion, knowledge gained and prototypes/new technologies developed, will be exploited in each partner's ongoing and future activities. It is also hoped that the public will benefit from improved health and wellbeing, which in the longer term will reduce healthcare costs.

##### 3.1.2. Consortium-wide exploitation activities

###### 3.1.2.1. Knowledge building

During the project, consortium members will build knowledge that can be applied to the development of future services, research grant applications, teaching programmes etc. Key questions that will be answered include:

- How can ubiquitous ICT systems, that allow long term monitoring, be used in preventive healthcare systems?
- How can multisource data be combined in decision-making processes?
- What are the key elements of health and behavioural data that are needed in preventive healthcare systems?
- How can healthcare services, self-management tools, data trackers etc be combined in an intelligent healthcare system?
- How can motivational techniques, such as motivational interviewing and gamification, be used to support behavioural change?
- What are the key elements that encourage users to engage with the system in the mid- to long-term, and reinforce commitment to behaviour change?
- How can an individual's behaviour be facilitated towards healthier lifestyles?

###### 3.1.2.2. Technical advances in system design

The PRECIOUS project will result in technical advances, especially in the development of a virtual individual model that is based on physiological signal analysis, as well as other data sources and related sensor technologies. PRECIOUS will contribute by innovating a model that utilizes physiological, environmental, and behavioural information collected with ICT-technologies including sensors and applications, and which results in a comprehensive overview of an individual's health status and its sub-elements, such as stress, recovery, sleep, physical activity, and nutrition. PRECIOUS further supports lifestyle change if needed, through motivational tools and gamification elements implemented in the system. Thus, the technical advances in PRECIOUS are related to the development of needed sensors, interfaces, and data modelling, which together make it possible to collect and analyse

various health-related data for producing meaningful feedback and for supporting behavioural change. To achieve this, development of physiological signal analysis and modelling of physical and mental function is needed, as well as the ability to extract meaningful data from extensive amounts of ubiquitous sensor data. Moreover, technical advances are needed when carefully designing the PRECIOUS system architecture on the chosen platform.

#### 3.1.2.3. Development of services

Based on the knowledge and technical expertise gained, it is expected that PRECIOUS will help the consortium partners (alone, or in collaboration with other organisations) to provide:

- New or improved preventive healthcare services
- New service models
- Increased efficacy, acceptability, and ease-of-use of ICT-based services
- Personalised services that build on user data

#### 3.1.2.4. Summary

Overall, PRECIOUS provides many possibilities for commercialisation of the results, as well as supporting further scientific work in this area. Thus, PRECIOUS results will be utilized to improve services in related industries, as well as for future research activities of the academic partners. PRECIOUS aims to demonstrate usability of preventive healthcare systems based on ubiquitous sensor data. If proven successful, the PRECIOUS system could allow for large-scale usage in the healthcare sector. Overall, it is hoped that the results of PRECIOUS will lead to the development of commercial healthcare services that result in improved public health and reduced prevalence of lifestyle-related diseases, such as type II diabetes. This would ultimately lead to cost-savings in the healthcare sector. The following section provides a more detailed account of the planned exploitation activities for each consortium member.

### 3.1.3. *Individual partner exploitation activities*

#### 3.1.3.1. Aalto

Aalto University is just starting its Health Factory, which aims to provide a well-tutored framework for various SMEs, hospitals and societal players in Helsinki, and across Finland, for practical health and well-being research and service design. Aalto will organize a joint workshop with Aalto Health Factory to promote incubation of new preventive care associated services and SMEs. Furthermore, joint courses with Aalto and SMEs in Helsinki will be held to promote preventive care related technologies and business concepts. Development of PRECIOUS will offer a multitude of common forums to promote very interesting and practical methodology to foster preventive care. We are sure that associated national and international activities planned in this proposal will greatly benefit the Health Factory as well as PRECIOUS. Our workshops, publications, developed wide-scale agile management system and Europe-wide cooperation network will thus accumulate great benefits and true impact for health research, as well as for people in acute need of truly effective preventive care.

#### 3.1.3.2. Campden BRI

Participation in PRECIOUS will raise the profile of Campden BRI in the diet and health area of the food industry. It will also foster the development of new contacts within the food industry and in UK government health departments (e.g. Department of Health, Public Health England). Contract work will hopefully be generated in the area of personalized food intake and reformulation for health, and the project will also stimulate research ideas for Campden BRI's ongoing member-funded research programme.

#### 3.1.3.3. EuroFIR AISBL

PRECIOUS will impact European, biotech SMEs, healthcare providers, regulators, consumers and scientists with the development of new tools, resources and approaches delivering dietary and lifestyle advice as well as robust and exploitable evidence of the benefits. EuroFIR AISBL is providing underpinning expertise and food description and composition data interfaced to the PRECIOUS food intake module. The outcomes and results of PRECIOUS will continue to strengthen scientific and technological excellence in food composition and dietary intake assessment for researchers in academia and industry, as well as dietitians and health professionals. Its delivery to users will provide information about nutrients and biologically active compounds with putative health effects, specifically as related to type II diabetes, CVD and stroke; spread excellence and enhance the impact of food composition and public health nutrition through training; establish and deliver user/stakeholder requirements for sustainable and durable food databank systems and delivery of the information using mobile and other platforms; and demonstrate how new scientific and technological knowledge may be exploited to strengthen competitiveness of European food industry (SMEs), producing evidence-based healthier food benefiting European citizens of all ages. Additional membership opportunities and new research projects will hopefully be generated in the area of personalised food intake especially among SMEs.

#### 3.1.3.4. Firstbeat

Firstbeat Technologies Ltd has developed an innovative heart rate variability based analysis technology for measurement of stress, recovery and physical activity (Lifestyle Assessment). Firstbeat will exploit the PRECIOUS project results in developing its physiological analytics further. The project provides increased understanding of health and wellbeing status, and factors affecting behavioural change. In addition, Firstbeat will develop its wellbeing services based on the research results.

#### 3.1.3.5. University of Helsinki

PRECIOUS will stimulate collaboration and further research involving scientists previously focusing only on health-related research or research on human-technology interaction both within the UH and between UH and the Aalto University. Firstbeat will exploit the results by developing further its offering to be used as a part of different wellbeing services. The experiences in the PRECIOUS project will be used to design Firstbeat technology and analysis to enable integration of multiple assessments and processes into a coherent, multi-level intervention strategy.

#### 3.1.3.6. Hospital Universitari Vall d'Hebron – Institut de Recerca Vall d'Hebron

PRECIIOUS will stimulate further research in VHIR to obtain more empirical evidence of its application. We will organize workshops to increase awareness in other medical centres about the relevance of health care self-management as preventive measure.

#### 3.1.3.7. Institut Mines-Telecom

Innovations and newly identified research challenges from the PRECIIOUS project will stimulate further research within Institut Mines-Telecom. We will organize a joint workshop with Partners Club of Institut Mines-Telecom to promote incubation of new preventive care associated services and SMEs. Moreover, since we are a graduate engineering school, the project-based learning pedagogical method implemented in Institut Mines-Telecom will take the benefits of PRECIIOUS to promote preventive care and related technologies and business concepts in teaching.

#### 3.1.3.8. UNIVIE

The results of the project will provide a significant stimulus to further research within University of Vienna as well as collaboration with the Medical University of Vienna and a couple of local SMEs in the field, exploiting especially the interdisciplinary nature of the project. In the domain of linked open data we plan to establish relationships to existing projects and data sources focusing on health promotion and disease prevention, especially in order to share our experience in enhancing the quality of controlled vocabularies in the health domain with related institutions and initiatives to contribute towards an best-practices approach in this area. Another important outcome of the project will be the envisioned close integration between the Experiment'HAAL lab run by Institut Mines-Telecom and the COSY:LAB set up at UNIVIE which is expected to lead to significant future collaborations and joint projects.

## Appendix I: Abstract submitted to 17<sup>th</sup> World Congress of Food Science and Technology & Expo

**Purpose:** In an EU FP7-funded collaborative project (PREventive Care Infrastructure based on Ubiquitous Sensing (PRECIOUS): Grant Agreement No. 611366) a preventive healthcare system will be developed. The system will be comprised of three components: 1) transparent sensors to monitor health indicators, especially food intake, physical activity, sleep and stress; 2) representation of the user by virtual individual models, which infer health risks and suggest behavioural changes; 3) use of gamification and motivational interview principles to change user habits towards more healthy conduct.

**Key Findings:** Food intake is known to impact on health, and a poor diet is associated with increased risk of obesity, type II diabetes and other metabolic disorders. Self-monitoring of food intake may help individuals to make dietary improvements. Monitoring tools should ideally provide an overview of habitual dietary intake for key nutrients. However, collecting accurate data on habitual intake is a key challenge in food intake monitoring.

Users are typically required to make day-to-day recordings of food intake. Traditionally such recordings are paper-based, and must be entered into dietary analysis software by a suitable health professional, who can feed information back to the individual. This approach is still valid in some situations, e.g. a clinical research setting or a one-to-one patient consultation. However, for the general population a more transparent, user-friendly system is required.

Advances in digital technology have provided this opportunity, and a number of mobile and internet applications can provide instant nutritional information about foods entered by the user. Other emerging tools include software that can process digital photographs of food, load sensing tables and motion sensors in clothing. These emerging tools offer greater transparency; however may provide less detail and accuracy.

**Future Directions:** PRECIOUS will review tools available for monitoring food intake and assess their recording accuracy, as well as gathering user feedback. The data collected will help to develop a user-friendly food intake tool for PRECIOUS, which will be enhanced by links to the virtual individual model, motivational tools and monitoring of other lifestyle aspects.

## **Appendix II: Abstract submitted to International Conference on Motivational Interviewing**

**Purpose:** To present the adaptation of motivational interviewing principles/techniques to a gamification system for behaviour change.

### **Background**

There is no doubt that games engage people as it should be fun and rewarding. Nowadays, there is an increasing interest whether game could be of benefit in certain scientific fields like education and health. Moreover, there is very recent evidence that gamification that is, the use of game principles in a non-game environment, may be used to enhance healthy lifestyles among people. Games for health purposes are in their early youth. To date, it seems quite easy to engage people to play games; however, it is more difficult to achieve persistence. Additionally, there are still no evidences that games can maintain behaviour change once the game ends. Motivational Interviewing (MI) is a promising 30-year-old therapeutic approach that integrates person-centred therapy principles and more directive strategies to move clients toward behaviour change. A large and expanding number of randomized control trials of MI have demonstrated its efficacy in different health settings and cultures, as well as its adaptability to other psychological techniques.

### **Overall Description**

In the PRECIOUS project a preventive healthcare system will be developed. The system will be comprised of three components: 1) transparent sensors to monitor health indicators, especially food intake, physical activity, sleep and stress; 2) representation of the user by virtual individual models, which infer health risks and suggest behavioural changes; 3) use of gamification and MI principles to change user habits towards more healthy behaviours.

To reach these goals, the PRECIOUS consortium gathers partners with comprehensive expertise in networking, pervasive sensing, cognitive analysis, nutrition research, semantic technologies, psychological theory and motivational techniques. We have chosen to focus on Type II Diabetes prevention as a central use case.

### **Motivational Interviewing principles adapted to a gamification system**

Computer games and MI share the ability to place the individual in the centre of the action. MI principles of personalized guiding are based on the four processes: 1) engaging, 2) establishing goal settings (focusing), 3) evoking the own user resources (self-control) and 4) planning; match with personalized health delivered through new technologies. A number of mobile and internet applications can provide instant feedback about lifestyles. Rewarding and praise (a positive evaluation of performance) of these tools are linked with MI principles.

### **Conclusion**

The contribution of MI experience to PRECIOUS will be to foster engagement and contribute to behavior change in a user-friendly system. This will be developed in two stages: 1)To describe the state-of-the-art of MI delivered through new technologies and 2)To offer an

integrative approach of a motivational framework for PRECIOUS System designing tailored motivational feedback.

\* **Funding:** The PRECIOUS project (PREventive Care Infrastructure based on Ubiquitous Sensing (PRECIOUS): Grant Agreement No. 611366) is a project supported by the European Commission through the seventh Framework programme (FP7).