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PREventive Care Infrastructure based on Ubiquitous Sensing

Instrument: Collaborative Project

Seventh Framework Programme (FP7) Call FP7-2013-10

# D6.2 Final dissemination and exploitation report

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## List of Acronyms

AALTO: Aalto University

AB: Advisory Board

CVD: Cardiovascular disease

EC: European Commission

FP7: Seventh Framework Programme

GPL: GNU General Public License

ICT: Information and Communications Technology

IMT: Institut Mines-Telecom

IPR: Intellectual Property Rights

KPI: Key Performance Indicators

LGPL: GNU Lesser General Public license

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

## Executive summary

The final report outlines in detail the dissemination and exploitation activities implemented in PRECIOUS over the project's three-year period. PRECIOUS dissemination actions aimed to communicate project activities and results to a wide audience, which includes industry, academia, government bodies, and the general public. The dissemination activities 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.

Furthermore, the PRECIOUS results provide many possibilities for commercial exploitation, as well as, supporting further scientific work and developer ecosystem in this area. Therefore, this deliverable also provides and overview of all the partner exploitation activities including, but not limited to, MSc/PhD thesis, teaching/training services, follow-up project or project proposals, open source projects, ecosystem development, stakeholder engagement/interaction, new guidelines, policy recommendations, product/service development, spinoff/start-up initiation and IPR actions (e.g. patents, trademarks, design rights, copyright). Moreover, the deliverable also includes a compilation of the project's key exploitable assets also presented is a key step in highlighting the exploitation possibilities and formulation of suitable exploitation strategy for each asset.

This deliverable continues to adapt the approaches for reporting, quantifying and evaluating KPIs for dissemination and exploitation activities (that was introduced in D6.1), and updates the records with the activities up to end of the project (Y3). We use these plans and indicators to validate the project performance against the pre-defined roadmap and KPIs for dissemination and exploitation.

The dissemination and exploitation activities will also be carried out beyond the project lifetime. These activities will aim to capitalise on knowledge and project results, concerning preventive healthcare systems that were generated during the project lifetime. 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.

# 1. Introduction

## 1.1. Background and objectives

### *1.1.1. Background on the PRECIOUS project*

The PRECIOUS project aims to develop a preventive care system to promote healthy lifestyles with a particular focus on the environmental, socio-psychological and physiological factors linked to two common non-communicable diseases: Type 2 Diabetes (T2D) and cardiovascular diseases (CVD). Each of these conditions has individually modifiable risk factors that include, for example, physical activity level, stress, sleep quality, food intake and substance use, as well as living environment. As such, behavioural interventions and motivation for lifestyle changes play a major role in reducing an individual risk to T2D and CVD.

Therefore, the PRECIOUS project aims to provide innovations in preventive health care that include:

- A new automated service that analyses user health and ambient data to identify present and future risk factors
- A novel motivational system that boosts the required user actions to reduce unhealthy habits and promote healthy ones
- An innovative gamified user interface, including key motivation elements from the gaming industry to trigger and maintain behavioral change

### *1.1.2. Specific objectives of deliverable D6.2*

The objective of this deliverable is to present the dissemination and exploitation activities for the PRECIOUS project that have taken place, as well as, those that are envisioned beyond the end of the official project's period. In this context, the term dissemination refers to the process of making available the concepts, results and deliverables to relevant stakeholders and to the wider audience. The potential stakeholders include targeted end users, SMEs, healthcare providers, research communities, health policy makers, and so on. Furthermore, the term exploitation refers to the utilization of the PRECIOUS project outputs in continued research activities in follow-up national or international projects, or in innovating, developing, creating, providing and/or marketing of services, products or processes that derived from the project results.

This deliverable collates, reports and analyses both the individual partner and consortium wide dissemination and exploitation activities carried out over the project lifetime. Moreover, the report pinpoints some of the activities (based on project results) that are to be sustained beyond the end project and the value derived their potential exploitation.

## 1.2. Context, scope and organisation of this deliverable

This deliverable is a follow-up to deliverable *D6.1 Preliminary Dissemination and Exploitation Report*. Deliverable D6.1 was initially submitted in M6 providing details on the approach for compilation of dissemination and exploitation activities and outcomes, as well as, details of some of the early activities in Y1. Following recommendations from the Y1 review of the PRECIOUS project (held in January 2015) a revised and updated version of D6.1 was submitted in M18, listing the dissemination and exploitation activities up to the middle of Y2. Additionally, in the revised D6.1 the following improvements were targeted to enhance quantification, planning and implementation of the activities. This for instance included:

- Definition of Key Performance Indicators (KPIs) separated by different channels to be able to better track progress of dissemination activities
- Definition of Success Criteria based on defined KPIs, to be able to evaluate progress or under-achievement and hence initiate respective actions
- Creation of a dissemination and exploitation roadmap split up into three phases, and described by project month and milestones, including regular quarterly progress and KPIs checks
- Creation of a dissemination and exploitation template facilitating tracking of KPIs to be filled out by every partner on a quarterly basis (see Appendix I: Exploitation & Dissemination Reporting Template)
- Creation of an Evaluation Table to be filled out every year to monitor progress of KPIs every year, and subsequently define actions to be undertaken to countermeasure problematic areas
- Extensive overhaul of the stakeholder analysis with inclusion of two key additional stakeholders, namely large corporate firms and public healthcare insurances
- Initiated process of increasing collaboration with other EU-funded projects
- Introduction of new dissemination measures, such as, a regularly updated blog, a central GitHub repository for interaction and feedback from the open-source community, and website trackers for web-related KPI detection
- Adapted list of possible stakeholders and outlined possible interactions on how the different groups can beneficially guide the project and what actions can be performed by them

This deliverable adapts the aforementioned approach for reporting, quantifying and evaluating KPIs for dissemination and exploitation activities, and updates the records with the activities up to end of the project (Y3). To that end, any notable improvements and possible missed targets over the three-year period are highlighted and analysed for the benefit of the post-project exploitation actions.

The rest of deliverable D6.2 is organized as follows. Section 2 outlines the final dissemination report. This includes a detailed review of dissemination activities across the different dissemination channels of the project. Section 3 presents the final exploitation report, including a listing of the exploitable assets from the project and an overview of exploration activities per partner. Then Section 4 evaluates the dissemination and exploitation activities against previously defined roadmaps and KPIs. Finally, conclusions and future directions are discussed in Section 5.

# 2. Final Dissemination Report

## 2.1. Introduction

The PRECIOUS consortium adapted multiple dissemination channels and approaches for reporting the projects concepts and results beyond the project. This included oral and presentations in various events attended by the key stakeholders identified by the project, leveraging the web and social media channels for instant and more frequent disseminations, as well as, sharing knowledge with research community through contributions to scientific publishing and conference venues. All these dissemination activities were carried out in accordance with the PRECIOUS Consortium Agreement, and agreed IPR principles.

Stakeholder engagement

The meaningful and high impact dissemination activities by the partners required a common agreement within the consortium on the strategy for stakeholder engagement. To that end, a special session of on stakeholder engagement was convened during the Y1 project plenary to identify and prioritise different stakeholders targeted by the project's dissemination activities. Thus, the following stakeholder groups were identified, classified and prioritised (1 being the highest priority group):

1 Consumers, End-Users, Patients' associations

2 Health Professionals

3 SMEs / Providers / Software developers (developer community)

4 Researchers / Research Community

5 Corporate Employers, Employee / diversity representatives, NGOs,

6 Media

7 Public healthcare organisations

8 Policymakers, Ministries

9 Health Insurance Providers

Furthermore, the consortium engaged in a "Message Mapping Session" which sought to specify "take out" message for each group, speculating the perception of the stakeholder group on the PRECIOUS project proposition (PRECIOUS), shaping the content that could be used to present PRECIOUS message, and defining the channels to be used to deliver this content to each group. Based on these criteria a more detailed specification of *Stakeholder Message Map* for each group was provided in D6.1 and is repeated in Appendix II: Stakeholder Message Map.

In this Section, the project's dissemination strategy is described briefly and the highlights of the dissemination activities throughout the lifetime of the project are listed (focusing more on consortium-wide achievements). A more detailed list of dissemination activities disaggregated to individual partner level is provided later in Section 2.2.

## 2.2. Dissemination channels

The PRECIOUS dissemination strategy required a diverse range of dissemination channels to be able to reach the different stakeholder groups mentioned in Section 0. Each target group had specific needs and profiles that influence how the project concepts and results were delivered to them. To that end, the dissemination channels can be grouped as follows:

- PRECIOUS website
- PRECIOUS social media channels
- Project communication materials (leaflets, newsletters etc.)
- Scientific publications
- Externally-organised events
- PRECIOUS organised events
- Scientific exchanges

The project dissemination over these different channels is described in the rest of this Section.

### *2.2.1. PRECIOUS website*

The PRECIOUS project website located at www.thepreciousproject.eu was used as the primary channel for interacting and providing people from all stakeholder groups that would be seeking information about the project. The landing page of the website (see Figure 1) included an image slideshow with very short text of the objectives with the intention of immediately conveying the project message to first time visitors. Furthermore, the structure of the website enables visitors to easily navigate to the publicly accessible pages, namely:

- *Home*: This is the PRECIOUS landing page, which included the welcome message, plus the feeds from the most recent news items and tweets.
- *Blog*: The blog page extended news items and a non-technical overview on the progress on a regular basis. These general online articles have included multimedia content (images, animations, videos etc.) with the purpose of making the research more visible and comprehensible to the public. The posting on blog page were also promoted on the PRECIOUS social media platforms.
- *Vision*: The vision page includes a short text describing the desired outcomes of the project and the approach reaching those outcomes.

- *Partners*: Partners page includes listing of the consortium members and links to respective organisations. The page also includes a collection of the pictures of the members of the project.
- *Publications*: The publications page is used as the main vehicle to disseminate public deliverables from the project and the project newsletters. The page also includes a selection of downloadable slides, posters and publications produced by the consortium members.
- *Contacts*: Project contact info for direct inquiries.
- *AB*: This page provides a brief profile of the PRECIOUS Advisory Board members.

Additionally, the website provided an interface for adding links to instructions used by participants in some the PRECIOUS field trials. The public sections of the website are managed by the project co-ordinator; however, all consortium members were responsible for suggesting revisions and contributing to its contents (via the co-ordinator). The 'Consortium Area' pages are password protected (intranet) and used exclusively as a tool of communication between the partners and for partners to download/upload confidential documentation of the projects (e.g. restricted deliverables, meeting minutes etc.). All partners have editor-level access for this section of the website.

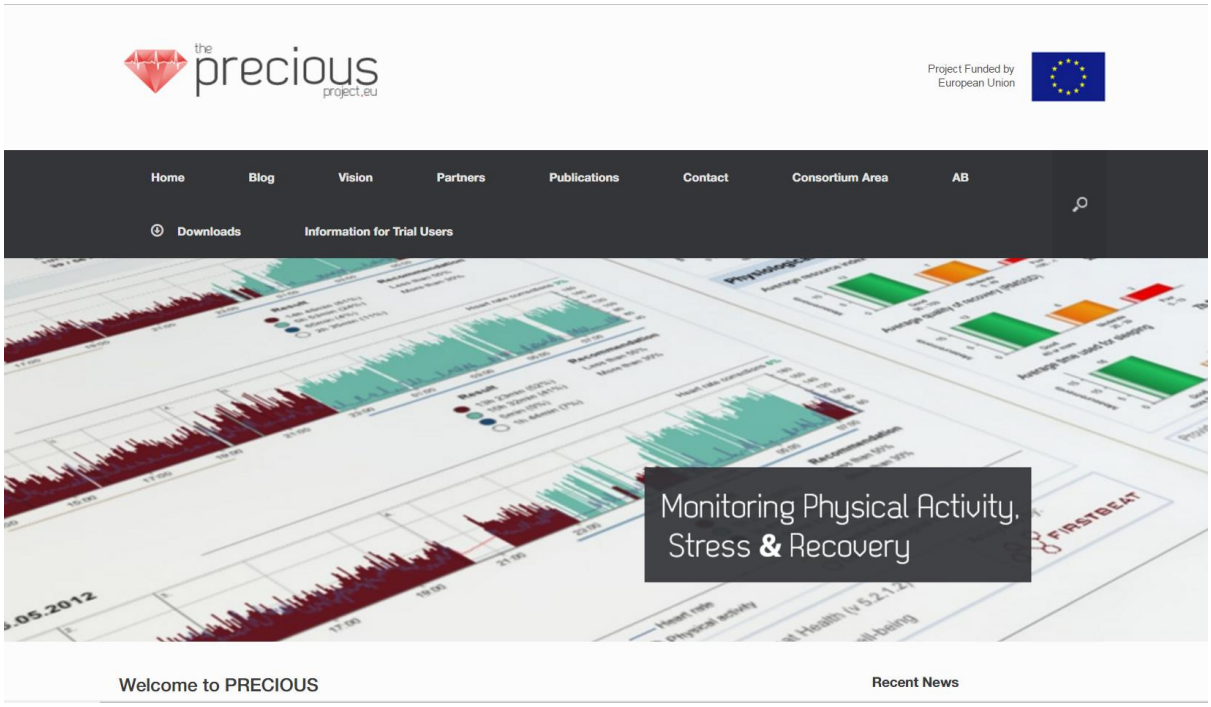


Figure 1 Screenshot of the PRECIOUS landing page

### *2.2.2. Social Media Channels*

The project has taken advantage of social media channels as a cost-effective set of channels for sharing immediate updates from the project to all stakeholder groups, targeting

both existing and new contacts. To that end, social media channels have been useful the project in a number of ways. This includes pushing instant updates (e.g. project news, multimedia content, announcements on upcoming project events etc.) from the project to external contacts (in different stakeholder groups) and on different platforms (including mobile social media apps). Furthermore, social media has enabled the project to interact with the contacts through messaging features in the channels, monitor the feedback and sentiments of each update and leveraging the social connectedness of the contacts to amplify the dissemination of the updates, as the contacts would share PRECIOUS updates within their own professional or social networks (e.g. by retweeting PRECIOUS update).

The project has used three primary social media channels shown in Figure 2. This includes:

- Facebook page: https://www.facebook.com/thepreciousprojecteu
- Twitter: Tightly controlled/moderated official Twitter account via @EUPrecious or https://twitter.com/EUPrecious and open discussion Twitter account via via @EU_Precious or https://twitter.com/EU_Precious
- LinkedIn group: https://www.linkedin.com/groups/7496046

The coordinator, WP6 leader and a select dissemination partners with the sign-in credentials have managed the social media channel updates.

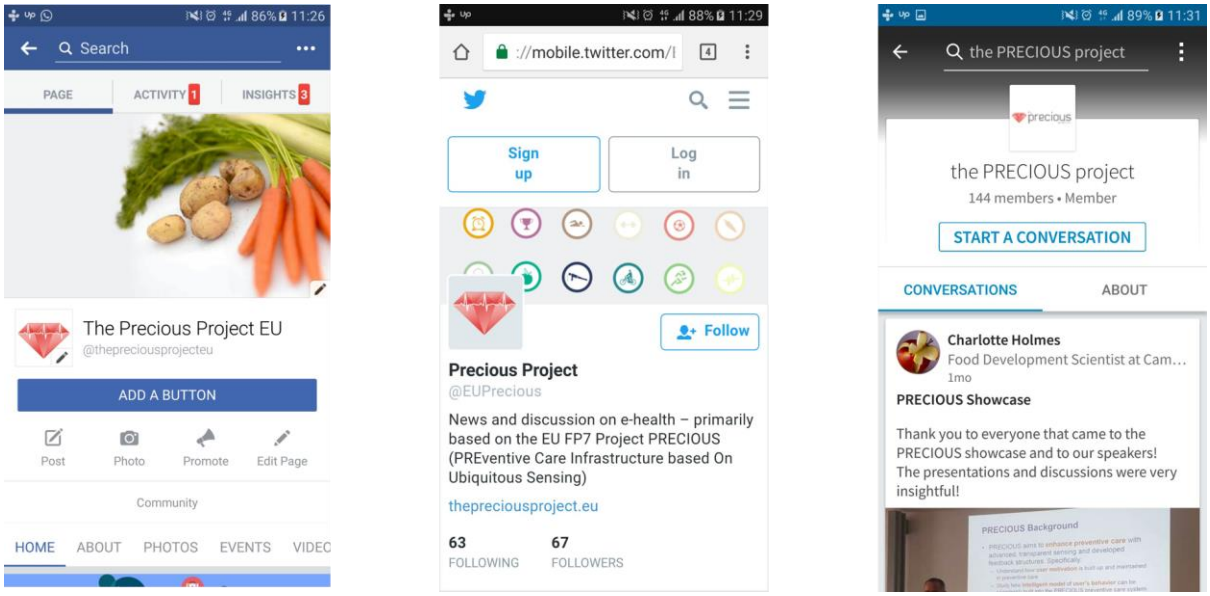


Figure 2 PRECIOUS social media channels (left to right: Facebook, Twitter, LinkedIn)

### *2.2.3. GitHub*

The PRECIOUS has also utilised web tools for both open-sourcing, disseminating and sharing of PRECIOUS code base with the wider developer community. The project followed

a GNU General Public license (GPL) or GNU Lesser General Public license (LGPL) licence strategy for its developments, depending on what is applicable based on third-party elements that are included. To that end, a central, public GitHub page[1] (screenshot shown below) for the entire project was used as the main platform for interaction with the open-source community and facilitate cooperation with other projects based on a shared code base.

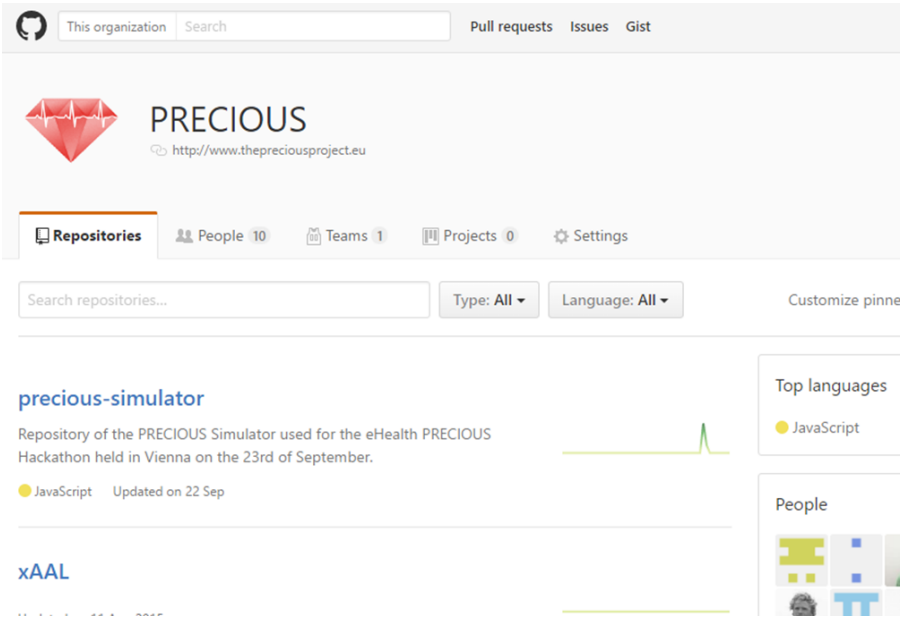


Figure 3 PRECIOUS GitHub page

### *2.2.4. Project communications materials*

#### 2.2.4.1. Project leaflet and presentation slide set

A softcopy of the leaflet describing PRECIOUS project (see Figure 4) was prepared and published on the publicly accessible 'Publications' area of the project's website. The hardcopy versions were printed and distributed in event various events, including those organised the by the project. Additionally, the project's introductory presentation slides were developed and placed in the same Publications page of the website. The slides introduced the PRECIOUS vision on future network technologies, key developments undertaken in the project, and the reasons why these developments are strategic, will be prepared.

[1] https://github.com/preciousproject

PROJECT:
FP7-ICT-2013-10
NOVEMBER 2013 – OCTOBER 2016

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Campden BRI
food and drink innovation

PREVENTIVE CARE INFRASTRUCTURE BASED ON UBIQUITOUS SENSING - PRECIOUS

The PREventive Care Infrastructure based On Ubiquitous Sensing (PRECIOUS) project aims to develop a preventive care system to promote healthy lifestyles, and is comprised of three components:

(1) Transparent sensors for monitoring users' health indicators (food intake, sleep and activity) that deliver ambient data about current user behaviour.
(2) Individual virtual models to represent users, which infer health risks and suggest behaviour changes.
(3) State-of-the-art motivational techniques, originating from gamification and motivational interviews, to trigger a set of feedback tools to change user habits toward more healthy behaviour.

While related projects usually focus on developing specific sensors, middleware solutions, health monitoring systems, eHealth services, etc., both the individual virtual model and the associated motivational tools will provide key innovation steps towards a preventive care system with measurable impacts on user behaviour. Thus, there is a clear potential for large scale commercialisation and a sustainable societal footprint (e.g. with respect to cost saving in the public health sector, as well as quality of life improvements).

To reach these goals, the PRECIOUS consortium has gathered partners from academia, SMEs and hospitals 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; however, our prototype will be easily adaptable to other lifestyle-induced diseases and their risk factors.

The system will not only detect and communicate detailed early warning signs, but also provide forecasts of future developments and secondary health-related complications (if change recommendations are not followed). Extensive lab and field-based user trials will demonstrate the efficacy of the PRECIOUS system and prove its positive and lasting impact on individual quality of life, as well as the public health sector by reducing expenditure.

Figure 4 PRECIOUS project leaflet

### 2.2.4.2. PRECIOUS Newsletter

The periodic PRECIOUS project newsletter was released twice a year, providing digest of the project progress and related events, as well as, items to look forward to in the period after the newsletter. A PDF copy of the newsletter was uploaded on the Publications page of the project website and a link to the newsletter was provided on the project's social media accounts. Furthermore the newsletter distributed by email to the consortium partner organisations, AB, EC, and other parties who have subscribed to it by registering online. The consortium members also had the responsibility of circulating the newsletter amongst their contacts.

Issue 5: May 2016 1

newsletter

Editorial

The PRECIOUS project is now entering its final phase with a number of field trials ongoing or planned at the time of the release of the issue of the PRECIOUS newsletter. The trials offer a valuable opportunity to validate the PRECIOUS ideas and collect field insights that may support further scientific outputs in this highly researched area of preventive care. This is also a time for the project to consider further exploitation and sustainability of the project innovations beyond the project lifetime. It is therefore appropriate that WP6 is in the spotlight for this issue of the PRECIOUS newsletter. We hope you will find this an insightful issue and look forward towards the final issue where we will have a look back on the challenges, findings and successes throughput the entire project period.

In this issue

- In the spotlight: Dissemination and Exploitation
- Progress and achievements
- News from the partners
- Recent and upcoming events
- Consortium partners
- Contact us

Figure 5 Example newsletter

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

- The *Editorial* authored by the project co-ordinator reflecting on the project progress and challenges in the given period;
- *In the Spotlight* will present the activities of a given work package (WP) in more detail (on a rotating basis);

- *Progress and achievements* provided a short progress report on the main developments in each WP and was authored by respective WP leaders;
- *News from the Partners* listed closely related activities occurring at partners' organisations and partner involvement in external events;
- *Upcoming events* was used to promote future events, including project activities.

A complete schedule and highlights of each of the six releases of the PRECIOUS newsletter is shown in Table 1.

Table 1 PRECIOUS 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 | | | |
| Oct. 2016 | | PRECIOUS Seminar[2] | | | |

In addition to the PRECIOUS newsletters, the project also leveraged newsletters by partners in the consortium with a large audience that the project's stakeholder group profiles. This included the PRECIOUS-related news dissemination carried out by Campden BRI and EuroFIR.

Campden BRI provides technical support to the food, drinks and allied industries, serving 2,000+ member companies[3] and other clients in 65+ countries. Campden BRI disseminated PRECIOUS information via its 'Diet, Health and Nutrition' newsfeed to its members. The dissemination included important updates regarding food intake monitoring research in PRECIOUS, as well as, overall project progress. Furthermore, on-site training and conference facilities were used by Campden BRI to host seminars/workshops for further dissemination of PRECIOUS outputs to key stakeholders.

EuroFIR AISBL is an international, member-based, non-profit Association with individual and institutional members including dieticians, food manufacturers, software developers, public-sector funding bodies, regulators and academia. All these members have access to EuroFIR's Newsletter[4] which was also used a channel by EuroFIR projects (including PRECIOUS) to update on on-going project activities and the related results. Furthermore,

[2] An exception was made for the sixth issue of the Newsletter whereby the main PRECIOUS Seminar was given the spotlight

[3] https://www.campdenbri.co.uk/research/migs.php

[4] http://eurofir.org/news-2/newsletter/

PRECIOUS announcements where also included in EuroFIR mailing list also has an extensive mailing list with more than 2000 contacts and a website for disseminating information globally. Furthermore, the EuroFIR participation in a wide variety of events (e.g. CommNet BioFora) will provide opportunities to disseminate information about PRECIOUS.

### *2.2.5. Externally Organised Events*

The PRECIOUS consortium has been present at a wide range of dissemination events organised by third parties in the areas of future networks, gamification, healthcare, nutrition and psychology. Events targeted have included academic conferences, non-academic forums, research outreach events and industry trade shows. The aim of attending these events has been to enhance networking opportunities within technology, scientific or health communities, raise awareness of the PRECIOUS project and convey project results.

During the project lifetime, PRECIOUS activities and results were presented in over 35 dissemination events. This demonstrated the focus of the PRECIOUS project partners on engaging the target stakeholders and on disseminating the generated knowledge. The PRECIOUS project presentations in these events where typically in the form of oral and/or poster presentations. The disseminations activities were performed under a common dissemination strategy supported by common dissemination tools, like the project leaflet, social media channels etc. The presentations from the project were diverse in terms thematic areas (sensor technologies, motivational aspects, dietary aspects etc.) according to the multidisciplinary nature of the project. However, the key dissemination message was homogeneous in terms of alignment to the PRECIOUS objectives (see Section 1.1). reflective of the were also homogeneous and were focused mainly either on the innovative aspect of the PRECIOUS or on the usage of standards and widely adopted guidelines to build an integrated Telecare and Telehealth platform from a technical point of view.

The following table summarizes all dissemination events where the PRECIOUS partners participated in, while in the *Appendix III: Dissemination Activities* provides a more detailed description of each dissemination activity.

Table 2 Summary of PRECIOUS presentations at external organised dissemination events

| # | Month / Year | Event Type | Place | Main theme(s) of event | Type of presentation | Partner(s) involved |
|---|---|---|---|---|---|---|
| 1. | 03/2014 | Symposium | Brussels, Belgium | Food data and tools | Oral | EuroFIR |
| 2. | 04/2014 | Conference | Obergurgl, Austria | Wireless networks | Oral/ paper | AALTO |
| 3. | 06/2014 | Conference | Amsterdam, Netherlands | Motivational Interviewing | Poster | VHIR, UNIVIE, HU |
| 4. | 08/2014 | Congress | Montreal, Canada, | Food science and technology | Oral/ paper | Campden, EuroFIR, AALTO |

| # | Month / Year | Event Type | Place | Main theme(s) of event | Type of presentation | Partner(s) involved |
|---|---|---|---|---|---|---|
| 5. | 08/2014 | Workshop | Innsbruck, Austria | Health psychology | Oral/ paper | HU |
| 6. | 09/2014 | Workshop | NY, USA | Networking technology | Oral/papers (2 papers) | AALTO |
| 7. | 10/2014 | Forum | Compostela, Spain | Motivational | Oral | VHIR |
| 8. | 11/2014 | Outreach | Helsinki, Finland | Social psychology | Oral | HU |
| 9. | 02/2015 | Conference | London, UK | Health behaviour change | Poster | HU, Firstbeat, AALTO, VHIR |
| 10. | 02/2015 | Seminar | Helsinki, Finland | Digital health | Oral | HU |
| 11. | 03/2015 | Symposium | Brussels, Belgium | Food science | Oral | AALTO |
| 12. | 04/2015 | Seminar | Helsinki, Finland | Statistics | Oral | HU |
| 13. | 05/2015 | Congress | Riga, Latvia | eHealth | Oral | AALTO |
| 14. | 05/2015 | Workshop | Pilos, Greece | Network quality of experience | Oral/paper | UNIVIE |
| 15. | 05/2015 | Conference/ Workshop | Kuala Lumpur, Malaysia | Network quality of experience | Oral/paper | UNIVIE |
| 16. | 05/2015 | Seminar | Helsinki, Finland | Human-computer interaction | Oral | HU |
| 17. | 06/2015 | Congress | London, UK | Digital health | Poster | EuroFIR, AALTO |
| 18. | 07/2015 | Project workshop | Ljublana,, Slovenia | Dietary monitoing | Oral | Campden, AALTO |
| 19. | 09/2015 | Conference | Vienna, Austria | Data science | Oral/paper | UNIVIE |
| 20. | 09/2015 | Conference | Limassol, Cyprus | Health behaviour change | 2 Posters | HU |
| 21. | 09/2015 | Conference | Porto, Portugal | Food and health | Poster | EuroFIR, AALTO |
| 22. | 10/2015 | Seminar | Poland | Motivational interviewing | Oral | VHIR |
| 23. | 10/2015 | Conference | Trondheim, Norway | Games, entertainment | Oral/paper | UNIVIE |

| # | Month / Year | Event Type | Place | Main theme(s) of event | Type of presentation | Partner(s) involved |
|---|---|---|---|---|---|---|
| | | | | computing | | |
| 24. | 10/2015 | Conference | Helsinki, Finland | Health psychology | Oral (x2) and Poster | HU |
| 25. | 10/2015 | Congress | Warsaw, Poland | Motivational interviewing | Oral | VHIR |
| 26. | 10/2015 | Forum | Berlin, Germany | Motivational interviewing | Oral | VHIR |
| 27. | 12/2015 | Conference | Brussels, Belgium | Mobile computing, multimedia | Oral/paper | UNIVIE |
| 28. | 12/2015 | Expert group meeting | Turku, Finland | Public health | Oral | HU |
| 29. | 02/2016 | Conference | London, UK | Behaviour change | Poster | HU, UNIVIE, VHIR, AALTO, Firstbeat |
| 30. | 02/2016 | Member Interest Group | Chipping, UK | Food industry | Oral | Campden |
| 31. | 03/2016 | Outreach | Espoo, Finland | Electrical eng. Research | Poster | AALTO |
| 32. | 06/2016 | Conference | Jyväskylä, Finland | Health promotion | Poster | HU, UNIVIE, VHIR, AALTO |
| 33. | 06/2016 | Conference | Budapest, Hungary | Health IoT, big data | Oral/paper | IMT |
| 34. | 06/2016 | Conference | Washington DC, USA | Connected health | Oral/paper | IMT |
| 35. | 06/2016 | Conference | San Francisco | Body sensor networks | Oral/paper | IMT |
| 36. | 07/2016 | Conference | Toulouse, France | Network/ IT security | Oral/paper | IMT |
| 37. | 08/2016 | Symposium | Aberdeen, UK | mHealth | Oral (x2) | HU |
| 38. | 10/2016 | Forum | Madrid, Spain | Motivational interviewing | 2 Posters | VHIR |
| 39. | 10/2016 | Member Interest Group | Chipping, UK | Food industry | Oral | Campden |

### *2.2.6. Scientific papers and other publications*

The PRECIOUS project consortium included partners from academic and a research-focused organisation, which combine ambitions on applied research with quest for scientific excellence. This underscored the need to share relevant results with the research community through papers presented in conferences (oral paper presentations in Table 2) and published in reputable journals, book chapters, scientific magazines and other popular scientific dissemination platforms in the areas relevant to the project.

At the time of writing of this deliverable, the project partners had authored and presented over 15 conference/workshop papers related to the PRECIOUS project work. Furthermore, the project partners have produced high quality scientific works, which appear in various journals that accept works linking to health, psychology and digital technologies addressed in PRECIOUS. The journals with PRECIOUS published works include:

- The European Health Psychologist[5]
- Journal of Intelligent Systems[6]
- The Journal of the Institute of Food Science and Technology[7]
- Journal of Sport and Exercise Psychology[8]
- Entertainment Computing[9]
- Computers in Human Behaviour[10]

In additional to already published or submitted scientific works, further outstanding research outputs are expected to be published well beyond the project lifetime, as some of the insights from the PRECIOUS final user trials and developments require time to unlock their scientific value. The publications produced or submitted to date are shown in *Appendix III: Dissemination Activities*.

### *2.2.7. Events organised by PRECIOUS partners*

The dissemination of project activities and results was also pursued in events organized individually or jointly by the PRECIOUS partners with an agenda specifically targeting the PRECIOUS project. These events included the main PRECIOUS project dissemination and

[5] http://ehps.net/ehp/index.php/contents

[6] https://www.degruyter.com/view/j/jisys

[7] http://www.fstjournal.org/

[8] http://journals.humankinetics.com/journal/jsep

[9] http://www.journals.elsevier.com/entertainment-computing

[10] http://www.journals.elsevier.com/computers-in-human-behavior

exploitation events organized in Austria and UK, in January 2016 and September 2016, respectively. These events a profiled in Sections 2.2.7.1 and 2.2.7.2.

The other notable events are those events organized by partners for specific interest groups. This includes events by Campden BRI and EuroFIR who can leverage their extensive membership base. To that end, Campden BRI has hosted regular on-site meetings with membership companies (Member Interest Groups), which offered the opportunity to provide updates to the food industry on PRECIOUS results, and receive feedback. The presentation of results was held in three Member Interest Group meetings (on 12th May 2015, 4th February 2016 and 6th October 2016) held at the company headquarters in Chipping Campden, UK. In the case of EuroFIR AISBL, a Technical Working Group was created 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.

#### 2.2.7.1. Next generation eHealth workshop (Vienna, Austria)

**Organisation**

The '*Next Generation eHealth: Apps, Games, Ecosystems*' workshop was organised and hosted by UNIVIE on 28th January 2016. The participants to the workshop included more than 50 people with a multitude of backgrounds, ranging from industry to public insurance or governmental institutions. The key goals of this workshop was to disseminate the results of the PRECIOUS project, and to create potential opportunities for exploitation of our app and ecosystem.

**Agenda and Outcomes**

The workshop consisted of three parts. In the first part, presentations where to provide a lively insight into current developments in the area of eHealth / mHealth and Behaviour Change. The interested audience learned the latest approaches from psychology and computer science, which are necessary for the understanding of eHealth systems and gained new ideas for the individual working contexts in addition to important know-how.

The second of the workshop was an interactive part where participants were asked to breakout into separate groups to either design their own health or medial app or analyse potential stakeholders in this domain. The theme of groups where:

- Design of Behavior Change App;
- Design of Gamified Medical App;
- Build your mHealth Ecosystem .

The third part of the workshop was a hands-on phase where people could test the PRECIOUS app themselves. The feedback was overwhelming, and the workshop greatly increased the visibility of the PRECIOUS project among the stakeholders participating in the event, resulting in follow-up collaboration ideas and stakeholder meetings.

**Photo story**

Figure 6 Images from the Next Generation eHealth workshop (*top row*: presentation of the PRECIOUS project, *bottom row*: breakout interactive group activities)

### 2.2.7.2. Showcase of the future eHealth and PRECIOUS seminar (London, UK)

**Organisation**

The seminar '*Showcase of the future eHealth and PRECIOUS*' workshop was organised by Campden in conjunction with the PRECIOUS consortium and held at the Imperial College of London on 23rd September 2016. The seminar attracted over 35 participants represented by a good mixture of representatives from academic, governmental and industrial stakeholders. The key goals of this seminar was to provide a showcase on the future of e-health and present results from the PRECIOUS project trials and on the development of a PRECIOUS ubiquitous preventive health care tool.

**Agenda and Outcomes**

The seminar included presentations from PRECIOUS project and from three invited keynote speakers working on areas close to the PRECIOUS project. The PRECIOUS project presentations included a presentation on the development journey of the PRECIOUS platform, presentation of the results from the different ongoing/completed user trials and a demo presentation of the different PRECIOUS tools. The keynote speakers:

- Jo Goossens from Shiftn who presented on; *personalised nutrition: a new setting for nutrition and health business*
- Dr Tim Lobstein from EC FP7 DAPHNE who presented on; *Data-as-a Service Platform for Healthy lifestyle and Preventive Medicine (DAPHNE)*
- Dr Felix Naughton from University of Cambridge who presented on; *The role of mobile sensing in behaviour change- Q-sense; a context aware smoking cessation app*.

The seminar event included networking opportunities during the breaks and after the final presentation. An informal poster session (including a selection of PRECIOUS project posters) was also included in the program to generate further talking points during the networking sessions. Overall the seminar provided a very useful opportunity to market PRECIOUS achievements as the seminar was held on the penultimate month of the project. Furthermore, it allowed for PRECIOUS project partners to receive feedback from the audience that will provide valuable in shaping the post-project research and exploitation activities building on the project results.

**Photo story**


Figure 7 A selection of images of the presentations and discussions at the PRECIOUS seminar in London

### *2.2.8. Scientific exchange*

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

PRECIOUS actively sought to link and interact with other EC-funded projects in the areas of future networks, sensors, preventive health and personalised health. The considered projects where selected based on their relevance to PRECIOUS and linkage possibilities. This would allow the PRECIOUS consortia to seek synergies with each other, and exploit opportunities for future research or business ventures. To that end, several formal and informal engagements where implemented with different external projects at different periods of the PRECIOUS project lifetime. The following EC-funded projects where considered to have the strongest links to PRECIOUS:

- FP7 QuaLiFY (Quantify Life – Feed Yourself)[11]
- FP7 DAPHNE (Data-as-a-Service Platform for Healthy Lifestyle and Preventive Medicine)[12]
- H2020 RICHFIELDS (Research Infrastructure on Consumer Health and Food Intake for E-science with Linked Data Sharing)[13]

A summary of some of the synergistic activities with these projects is presented in Table ….

| Partner EC-funded Project | Synergies or links with PRECIOUS |
|---|---|
| FP7 QuaLiFY  | • Collaboration have been formalized with NDA signed to further deepen exchange of results and utilisation of platforms.<br>• Agreement to share information and SW deliverables, as well as, leveraging of respective platforms for service delivery (e.g. linking to the FP7 QUALIFY Quisper platform).<br>• PRECIOUS project was presented at a QUALiFY consortium meeting (29th June – 1st July 2015). Furthermore, PRECIOUS and QUALiFY have had joint dissemination including: A shared booth at EFAD 9th Conference Amsterdam \| Dietitians meeting the Food & Nutrition Action Plan, October 2015;<br>• Produced a joint article on “Electronic tools for health choices” in the Food Science and Technology Journal http://fstjournal.org/features/29-4/healthy-choices.<br>• Invited presentation by FP7 QuaLiFY partner (ShiftN) at the |

[11] http://www.qualify-fp7.eu/ , grant agreement number: 613783

[12] http://www.daphne-fp7.eu/ , grant agreement number: 610440

[13] http://www.richfields.eu/ , grant agreement number: 654280

| Partner EC-funded Project | Synergies or links with PRECIOUS |
|---|---|
| | PRECIOUS Showcase Seminar of September 2016 (see Section 2.2.7.2) |
| FP7 DAPHNE | • Online collaboration discussions on common areas of research http://www.daphne-fp7.eu/node/153<br>• Invited presentation by FP7 DAPHNE coordinator at the PRECIOUS Showcase Seminar of September 2016 (see Section 2.2.7.2) |
| H2020 RICHFIELDS | • H2020 RICHFIELDS selected PRECIOUS platform as one of the Research Infrastructures to be considered for the RICHFIELDS case study<br>• Participation in RICHFIELDS by PRECIOUS coordinator (AALTO) and EuroFIR |

#### 2.2.8.2. PRECIOUS Advisory Board

The creation of an Advisory Board (AB) was a key strategy for the engagement of stakeholders from both industry and scientific/research communities. The members of the AB where invited by different PRECIOUS partners and where based in different countries so as to also leverage different regional perspectives. The eventual AB consisted of the following members:

- Dr. Falko Sniehotta, UK
- Dr. Joan Colom, Spain
- Dr. Olli Pitkänen, Finland
- Kirsi Mikkonen, Finland
- Sabri Abarkan. Germany
- Ólafur Andri, Iceland
- Barbara Koroušic, Slovenia

A more detailed profile of the AB members is provided in Appendix IV: Advisory Board Profile.

The AB members where consulted mostly by email correspondence of other online teleconferencing tools by different partners during the different stages of the project. For broader consortium-wide consultation, the PRECIOUS project and future plans were presented to the AB members in a teleconference with PRECIOUS consortium. The members who were unable to attend where presented offline presentations (where embedded voice commentary) for review at own convenient. Online survey forms were also

created to gather AB input outside the presentation slot. The PRECIOUS online dissemination channels presented previously also provided a convenient opportunity for the AB to obtain immediate updates and events from the project.

# 3. Final Exploitation Report

## 3.1. Introduction

### *3.1.1. Key Research Questions*

The PRECIOUS project aimed to provide a preventive care system that will promote healthy lifestyles. To that end, the PRECIOUS consortium sought to address a number of key and relevant questions, which included:

- How can ubiquitous ICT systems, that enable 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 needed in preventive healthcare systems?
- How can healthcare services, self-management tools, data trackers etc. can 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?

To effectively address the aforementioned questions, the PRECIOUS consortium combined 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 leveraged their combined expertise to deliver the project aims but also unlock academic, scientific, or commercial benefits and other positive outcomes the respective organisations. The general expectation following the project completion is that the knowledge gained, technology prototypes and concepts developed, will be exploited in each partner's ongoing and future activities.

### *3.1.2. Exploitation Timeline*

The PRECIOUS project exploitation timeline can be roughly split into four stages as shown in Figure 8. The initial stages (M1-M9) of the project provided an understanding of how to position the exploitation of some of the envisioned project results for different users and stakeholder groups. This also guided the early system and service developments, as well as, the market studies and specification of the preliminary exploitation activities in the mid stage of the project (M10-M24). The final stage of the project (M25-M36) coincided with the period in which developments in the project reached an advanced stage and interactions with users, stakeholders and other key partners where ramped up. This final stage provided clarity on what PRECIOUS results are exploitable from a commercial and/or research perspective. The post-project phase will seek to sustain of some of the medium/long-term exploitation activities initiated during the project lifetime and provide the environment for meaningfully unlocking unexploited project results.

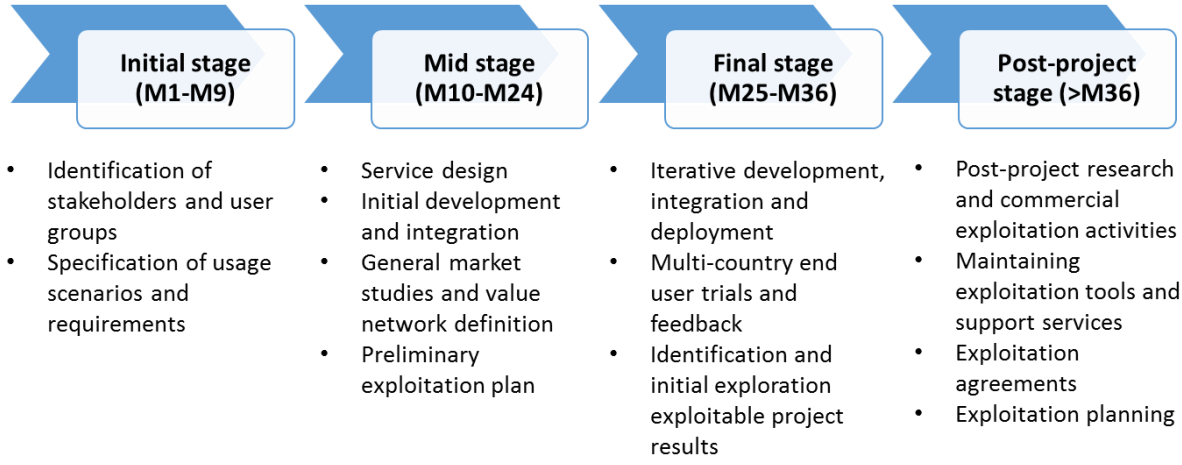



Figure 8 PRECIOUS project exploitation timeline

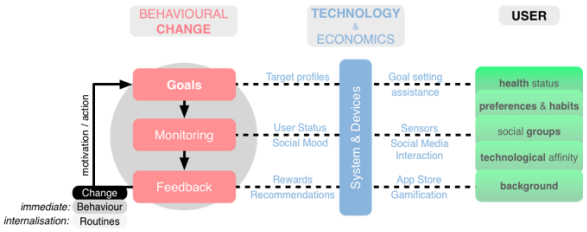
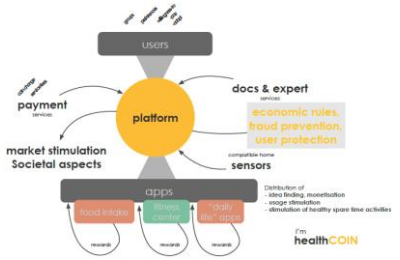
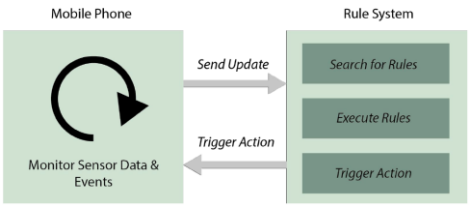
## 3.2. Overview of PRECIOUS Exploitable Assets

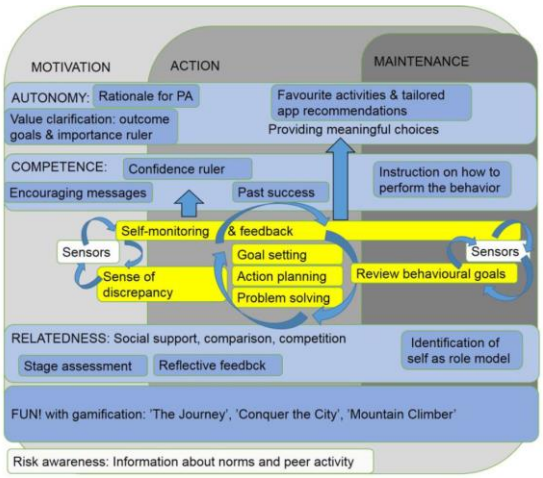
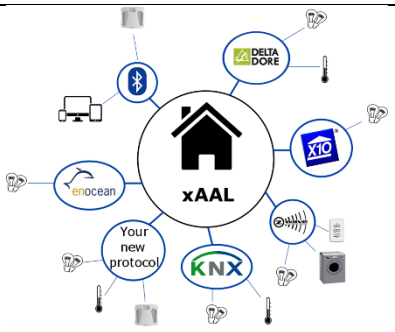
The PRECIOUS results provide many possibilities for commercial exploitation, as well as, supporting further scientific work and developer ecosystem in this area. Thus, PRECIOUS results will be utilized to improve services in related industries, as well as for future research activities of the academic partners. The compilation of the project's exploitable assets is a key step in highlighting the exploitation possibilities and formulation of suitable exploitation strategy for each asset. A detailed listing of the PRECIOUS exploitable is provided in Table 3. The list includes:

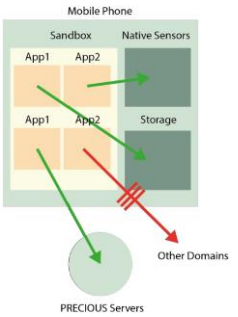
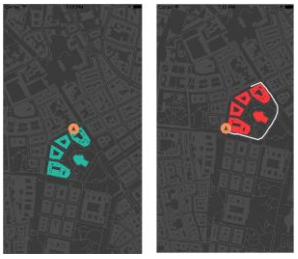
- Brief description of each exploitable asset
- Classification of the exploitation asset based product or service type
- Key partners associated with the exploitation asset

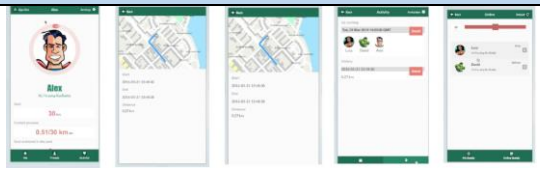
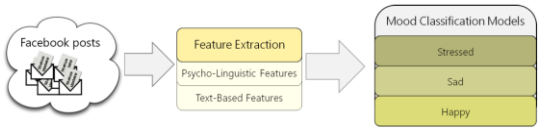
Table 3 PRECIOUS exploitable assets

| # | Exploitable Asset | Type | Owner / Partners Involved | Brief Description |
|---|---|---|---|---|
| 1. | Intelligent intervention (application) organizing/suggesting system | Software platform and hardware (Complete suite of PRECIOUS client, backend and sensor integration) | All | LifeTracker service compositions of atomic services on the mobile based on user's real and measured data. The dynamic App-Recommendation selects Apps to collect sensor data and generate individual model. The service includes the logic to keep users motivated to adhere to health interventions, based on user goals, psychological and physiological parameters and contextual data to create tailored service. The invention has a very high market potential as the number of different Apps keeps increasing and it is very difficult for health professionals or individuals to choose the most |

| # | Exploitable Asset | Type | Owner / Partners Involved | Brief Description |
|---|---|---|---|---|
| | | | | suitable for their needs. It is also very promising for stakeholders who want to build a health "ecosystem" where different Apps can be used if possible to leverage to larger number of Apps (also other than specified in the PRECIOUS project).<br>  |
| 2. | Health ecosystem platform (reward system) | Software platform and algorithms? | UNIVIE, AALTO, HU, IMT, VHIR | Health platform facilitating the automated interaction between users, developers, health professionals or public entities within an ecosystem where different stakeholder business goals are considered, with the common goal of improving the users health quantified by HealthCOIN rewarding system. HealthCOIN as currency for purchasing home sensors, health services, as well as rewarding, social comparison and motivation.<br>  |
| 3. | Freely modifiable rule creation system for health professionals | Software and algorithms | UNIVIE, AALTO | A rule creation system for health professionals making it possible for them to modify and produce rules that support health care of customers. The system can be used with any data (e.g. sensor or user input) to build a guidance system into mobile platforms.<br>  |
| 4. | Food intake sensor / smart bracelet | Hardware, algorithms and mobile app | AALTO, Cambden BRI, EuroFIR | Food intake sensor with backend cloud service for food analysis and recommendation. Food-based analysis including digital imaging analysis and information from other sources e.g. diary-based apps, barcode scanning and information from food scanners (if this materializes). The sensor will be a wristband integrated camera that can be used to take pictures of food which will be analysed by a cloud service for its |

| # | Exploitable Asset | Type | Owner / Partners Involved | Brief Description |
|---|---|---|---|---|
| | | | | content. The wristband will include optical heart rate monitoring. Potential conflicts with existing patents (or patent applications). |
| 5. | Motivational service concept | Service / consultancy, software | HU, IMT, AALTO, UNIVIE | The motivational service concept utilizes motivational interviewing and self-determination theories to create user-facing apps (e.g. physical activity apps, diet apps, etc.) that aim to encourages long-term behavioural changes. The apps leverage gamification principles, a reward system and education. This implementation enable the users to see their progress in a dynamic and interactive manner which will motivate them to achieve more challenges and consequently, to reach their goals.   |
| 6. | PRECIOUS@home gateway | Hardware and software platform | IMT | The service allows to monitor the indoor environment quality to have a better understanding of the home user context. Moreover, it allows to dispatch dedicated user feedbacks in the home environment to "coach" users and help them to achieve their goals. Technically, PRECIOUS@Home is a gateway (using xAAL protocol) between the user local area network and the PRECIOUS Health & Well-being server. http://recherche.telecom-bretagne.eu/xaal/projects/precioushome/   |

| # | Exploitable Asset | Type | Owner / Partners Involved | Brief Description |
|---|---|---|---|---|
| 7. | PRECIOUS sandbox-model | Software | UNIVIE | Sandbox represents an isolated runtime environment on the user's mobile device in which external or third-party developers can execute their own apps in a controlled and secure way. It is a modular plugin system, which enables these apps to use all the native functionality of the user's smartphone, such as, accessing native sensor data (Accelerometer, Gyroscope, Magnetometer, GPS, etc.), contacts, photos, videos, and other functionality if permitted by the user. Additionally, we provide simple functionality for developers to store their data on trusted servers.   |
| 8. | Conquer the city | Software (Mobile app) | UNIVIE | Conquer the City (CTC) is an app which serves as a tool for behaviour change (physical activity). With the app the users can occupy buildings by circling them within a given period of time and by not exceeding a threshold velocity. Red buildings, in the prototype version, mark buildings which are occupied by others, while green buildings show areas occupied by the respective user.  The main effect that is hoped to be achieved is an increased level of physical activity, as users will more and more engage in occupying areas of their interest. |
| 9. | RunBuddy | Software (Mobile app) | UNIVIE | RunBuddy was implemented using JQuery Mobile and is used as a behaviour change tool for physical activity where users can manage their running tracks over time. Additionally, users can check which friends are online and invite them to a meeting place where a potential run could begin. It hence uses the social component of PRECIOUS to motivate people to perform increased levels of physical activity. Users can review which tracks were run with their friends, and also find new users with whom they can engage in running activities. |

| # | Exploitable Asset | Type | Owner / Partners Involved | Brief Description |
|---|---|---|---|---|
| | | | |  |
| 10. | Mood classifier | Algorithms | UNIVIE | Mood classifier are algorithms used analyse the person's textual communication in social media to extract related mood information. The semantic analysis of textual social media can be used to reduce the total sparsity of information and uncertainty of the mood identification process.   |
| 11. | Lifestyle Assessment Software | Software | AALTO, FB | The Lifestyle assessment software is used with the FIRSTBEAT BodyGuard2 HRV monitor and it provides a detail analysis of your daily physical activities. The analysis information includes the stress and recovery reactions, sleep related information and steps and energy consumption of the user. The application is supported on Windows 7, Windows 8 and Windows 10. |
| 12. | Video heartrate detection | Algorithms, software | UNIVIE | A video-based heart rate detection for mobile platforms that could potential input for developers of health apps. Possible use also for games developers. For instance, potential input for arrow shooting game whereby arrow moves depending on heart rate.  |
| 13. | Automated analysis of sleep period | Software/ algorithms | FB | Algorithm which tracks when a person is sleeping based on heartbeat and acceleration data. |
| 14. | Reference implementation of REST interface (API) | Software | FB | A reference implementation of REST API which delivers results of advanced heartbeat analytics by Firstbeat between servers. |
| 15. | Upgrade on physical activity analysis for fulfillment of physical activity recommendations | Software/ algorithms | FB | Algorithm upgrade which analyses how well the physical activity recommendations are met within the day, which takes into account heartbeat data, acceleration data, and user's background parameters. Algorithm was validated and tested with a large amount of data from different users. |

## 3.3. Individual partner exploitation activities

### *3.3.1. Aalto University (AALTO)*

MSc/PhD thesis works:

- The PRECIOUS team member and developer from Aalto University, Todor Ginchev had his Master's Thesis accepted in December 2015. The thesis titled "*Wearable Electronic Device Design for Preventive Health Care-Related Purposes*" was based on Todor's work experimental work in WP4 of PRECIOUS project on development of wearable bracelet for monitoring food intake, sleep, physical activities, and so on.

- Former PRECIOUS team member from Aalto University, Tea Latvala had her Master's Thesis formally accepted in August 2016. The thesis titled "*Mobile Interface Design for Evoking Motivation: Design Implications from Self-Determination Theory and Motivational Interviewing*" was based on Tea's work on user experience design in the PRECIOUS project. This study aimed at finding ways to structure a mobile user interface in a way that it evokes user's inner motivation toward a behavioural change.

Follow-up project / proposals:

- H2020 RICHFIELDS project: The RICHFIELDS project (grant agreement No 654280) aims to design a consumer data platform, to collect and connect, compare and share information about food behaviours, to revolutionise research on every-day choices made across Europe. Bringing together science, industry and technology, RICHFIELDS will utilise previously underexploited "big data" to assess the potential to link and share information generated by us daily (e.g. apps, sensors), as well as by business (e.g. retail and manufactures) and research (e.g. medical, sales, surveillance data). The RICHFIELDS project kicked off in October 2015 (corresponding to M23 of PRECIOUS). PRECIOUS is one of the four Research Infrastructures used for the Case Studies of WP9 in RICHFIELDS. To that end, AALTO role in RICHFIELDS is focusing on "*Case Study 9.4: Consumer diet, health and lifestyle*" based on the use of PRECIOUS platform for collection of behavior/lifestyle information and presenting feedback for healthy lifestyle choices.

- H2020 EuHFoRIC proposal: The EuHFoRIC proposal aimed, among others, integrate, at the EU-level, key national, European and international food-, nutrition- and health-related knowledge including data, tools, services and facilities to optimise access, use and joint future development for European researchers. AALTO was contributed to "*Case Study 8: Personalised dietary advice services: Optimising sensors, gamification and wearables*," with the PRECIOUS platform. The EuHFoRIC proposal was prepared in response to call "H2020-INFRAIA-2016-2017 Integrating and opening research infrastructures of European interest" and submitted in March 2016. Unfortunately, EuHFoRIC was not funded, but there is likelihood that majority of the consortium will team up to resubmit an improved version of the proposal.

Product/service development:

- AALTO has been considering ways on how to commercialise the smart bracelet developed in the PRECIOUS project. This requires a careful review on the AALTO's current smart bracelet design and requirements for transitioning to a commercial product. To that end, AALTO engaged Bittium to assess the current design and propose improvements. Bittium (https://www.bittium.com/) is a specialist in development of wireless devices for market entry. The Bittium assessment included: system design audit, schematics audit, recommendations on design improvements or new components proposals, and Rough-Order-Magnitude quote for commercial manufacturing of 100, 1000 and 10,000 units based on the improved design (100 and 1000 pcs are prototype quality and 1

### *3.3.2. Campden BRI*

Areas of potential exploitation are mainly based around Campden BRI's dissemination of the project to food industry stakeholders (Campden BRI members), and the organising of the seminar. In terms of going forward, the project has enabled Campden BRI to gain a greater understanding of nutritional guidelines across the EU, and a greater understanding of ethical approval processes in the UK which will enable Campden BRI to more effectively support our members in terms of nutrition and ethics in Europe. The project has also enabled us to explore the potential to expand the types of consumer testing we can offer to include usability investigations, although this is in the early stages of exploration.

### *3.3.3. EuroFIR AISBL*

EuroFIR has had regular stakeholder engagement with key international associations also based in Brussels (Food Consumers, Health and Fitness, Active Ageing, …), whereby, some of the PRECIOUS project updates were also provided. EuroFIR has also been active in linking PRECIOUS to new research proposals. This includes the H2020 RICHFIELDS (Research Infrastructure on Consumer Health and Food Intake for E-science with Linked Data Sharing) project (http://www.richfields.eu/) and the H2020 project proposal EuHFoRIC (A Food Security, Nutrition and Health Research Infrastructure Starting Community).

### *3.3.4. Firstbeat*

Firstbeat research in PRECIOUS has added some critical improvements to existing assets. This includes improvements in algorithms for sleep quality and analysis of compliance of day physical activity recommendations. Furthermore, the implementation of a REST API has added flexibility in delivery of advanced heartbeat analytics by Firstbeat between servers. The key use case for this implementation was lifestyle assessment tool that sent monitoring data and analytics results between PRECIOUS cloud server and the Firstbeat analytics server.

### 3.3.5. University of Helsinki

MSc/PhD thesis works:

- Mirte Reimerink (Wageningen University, The Netherlands) completed an MSc internship which was roughly ½ time in the Precious project. She worked to conduct interviews with potential end users of the Precious service, and created some reports summarizing the results of these interviews.

Teaching/training services:

- Ari Haukkala and Keegan Knittle taught a course to bachelor level Social Psychology students at University of Helsinki, which focuses partly on recent developments within mHealth and how the principles of mHealth and gamification can best be applied to help individuals change their behaviour.

Follow-up projects or project proposals:

- Keegan Knittle and Ari Haukkala were part of a funding application for the Finnish Strategic Research Council, that would have funded a consortium of researchers to explore Precious' potential when delivered broadly in a public healthcare system. Despite reaching the last 8 proposals, this consortium project was unfortunately not funded.
- Keegan Knittle (together with Ari Haukkala) applied for a 3-year postdoctoral position from the Academy of Finland which would investigate social context in weight loss treatment programs at the Helsinki Obesity Center and explore the potential and added value of integrating the Precious system into existing weight loss care pathways in public healthcare settings. Decision pending.
- Keegan Knittle and Johanna Nurmi applied for postdoctoral and PhD grants, respectively, from the Juho Vainio foundation, which will allow them to conduct a second round of n-of-1 trials within the Precious system to further explore how Precious' individual components contribute to sustained use of the system and motivation for physical activity.
- Ari Haukkala and Keegan Knittle were named as collaborators on a grant received by Nelli Hankonen (University of Tampere), which will utilize some of the tools in the Precious system to investigate how users can self-manage fluctuations in their motivation for health behaviours over time. (Grant title: Self-determined motivation for work and health: investigating fluctuations of motivation and identifying effective strategies for motivational self-management; Funded by: Academy of Finland)

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

University Hospital Vall d'Hebron - VHIR has contributed to Task 6.1: Creating dissemination strategy, ensuring that progress and results of PRECIOUS are distributed frequently to key stakeholders and different audiences. To this purpose, we have carried out several informative sessions of the project inside our institution (HUVH-VHIR), to share the project and its findings with the rest of the health professionals. Additionally, we have contributed to

the Precious blogpost to share in a more divulgate manner our framework and progresses, aimed at non necessarily researcher audiences. We have registered the pilot in ClinicalTrials.Gov and we have sent a manuscript with the full protocol of the pilot at VHIR, to be considered for publication in Journal of Medical Internet Research - Research Protocols. Preliminary findings of the main outcome variables of the pilot have been obtained too, and a scientific manuscript has been prepared and sent to Trials (under review). Besides, 3 international and 2 national oral presentations have been given, to present the motivational framework of Precious system and how these techniques and psychological theories have been combined with other disciplines and knowledge, to create the Precious system. To the same purposes, three poster presentations have been published too in national and international conferences.

We have also contributed to Task 6.2: Integration of Advisory Board within the project by sharing with the AB member from Spain our progresses and findings and asking him for feedback and improvement inputs. The Newsletters and the minutes have been sent to him, regularly. Dr. Colom is subdirector of the Public Health Agency of Catalonia and Research & Innovation Manager

### *3.3.7. Institut Mines-Telecom (IMT)*

- The IMT is exploiting its results within the two following research projects:
  - The Vitaal project (Vaincre l'Isolement par les Tic pour l'Ambient Assisted Living) is financially supported through the French Contract Plan Region (CPER 2015-2010). The Vitaal project aims to fight against the isolation of people through new technologies in the context of health and well- being. The xAAL system developed by the IMT for PRECIOUS is a core component of the Vitaal platform.
  - The SHELL project (Silver Health and Life Living Lab) aims to federate Living Labs of the Institute Mines Telecom dedicated to health and well-being. The IMT living lab (Experiment'Haal) is a core node of the SHELL project. Thanks to networking actions inside the SHELL project, the IMT w shares scientific and technical materials with other nodes, including the xAAL system.
- The IMT is an engineering high school (french "grande école"). In this context, research projects are a key opportunity for teaching activities of innovative technologies. The work performed for the PRECIOUS project has served as a context for several student's and trainee's projects, for instance to develop a voice interface for home automation, or to performs interactions between a robot and a home automation system.

### *3.3.8. University of Vienna (UNIVIE)*

- To pro-actively exploit the PRECIOUS results in industry, a start-up was founded (Robimo GmbH, http://www.robimo.at), which aims at introducing products that incorporate PRECIOUS research. Also to this end, a cooperation was formed with Go4Health (http://www.go-4-health.com/). Go4Health can contribute an effective

network across Europe and by this assist efforts of communication and market introduction of PRECIOUS-inspired products on a European scale.

- UNIVIE engaged in several activities aimed at making the results of the PRECIUS project available to industry and together explore opportunities of further exploitation. To this end, strategic meetings were held (1) with two large pharmaceutical companies, (2) the eHealth divison of a large electronic device manufacturer, (3) the austrian social insurance association.
- Additionally, UNIVIE held a workshop with upper management industry representatives as well as other stakeholders from in the health- and health management sector ("Uni Mind - University meets Industry") to explore a possible next generation of eHealth services such as PRECIOUS. (See further: http://www.postgraduatecenter.at/unimind/rueckblick/201516-gesellschaft-im-wandel/unimindworkshop-next-generation-ehealth/).
- Furthermore, a publication aimed at introducing next generation eHealth to a broader audience: *H. Hlavacs, Next Generation mHealth: Games, Apps, Ökosysteme, in Gesellschaft im Wandel - Gesellschaftliche, wirtschaftliche und ökologische Perspektiven (J. Fritz, N. Tomaschek, Hrsg.), Waxmann Münster, New York, München, Berlin, 2016. ISBN 978-3-8309-3465-3.*

# 4. Evaluation against Dissemination and Exploitation Plans

## 4.1. Assessment Methodology

The interdisciplinary nature of PRECIOUS the consortium required a dissemination and exploitation strategy that takes advantage of the different strength of the partners in respective areas. While, research oriented partner focus on covering the scientific exploitation channels, other partners exploit their strength in domain specific channels or industry contacts. The heterogeneity in dissemination and exploitation plans and priorities underlined the need definition of streamlined assessment methodologies. These enabled planning and validation of the level of success of the dissemination and exploitation activities at partner or consortium level.

After the Y1 review, we adapted our assessment methodology to better characterise and quantify the dissemination and exploitation activities by the project. The timeliness of measures has been monitored in terms of deviations from the plan roadmap (see Section 4.2). For this purpose, the dissemination and exploitation activity assessment will rely on the following processes:

- Pre-planning for upcoming quarters (by every partner)
- Template-based activity recording (see Appendix I: Exploitation & Dissemination Reporting Template). This template was maintained as a shared Google doc for sharing and reporting of WP6 activities by different partners
- Aggregation of results and creation of KPIs (previously introduced in D6.1 and reproduced in Appendix V: Dissemination & Exploitation KPIs)
- KPI assessment against specified success criteria and interpretation
- Reporting to WP1 and collection for submission to EC and the project reviewing team

The above processes and some of the interim checks were intended to help the consortium to achieve the desired targets. Partners were encouraged to enter planned dissemination or exploitation activities as soon as possible (at least quarterly) into the reporting document. The status of the activities against KPIs was occasionally reported on the project mailing list and in plenary meetings to initiate proactive measures wherever targets where far from being met.

## 4.2. Validation against Dissemination and Exploitation Roadmap

**Phase 1** - Y1, M1-M12

| | | | |
|---|---|---|---|
| **M1** | ■ | Website Implementation & Design completed | ✓ |
| | ■ | Logo Design completed | ✓ |

| | | | |
|---|---|---|---|
| **M6** | ■ | Distribution of PRECIOUS Newsletter | ✓ |
| | ■ | D6.1 Preliminary dissemination and exploitation report | ✓ |
| | | Internal social media policy set up | ✓ |
| **M9** | ■ | D2.1 List of usage scenarios and user requirements | ✓ |
| **M12** | ■ | Distribution of PRECIOUS Newsletter | ✓ |
| | ■ | D2.4 Ethical and privacy guidelines for PRECIOUS system implementation | ✓ |
| | ■ | D3.1 Interim report on behavioural representation and virtual individual modelling | ✓ |
| | ■ | D3.1 Interim report on behavioural representation and virtual individual modelling | ✓ |
| | | Collaboration with first project (or project liaison) initiated | ✓ |

**Phase 2** - Y2, M13-M24

| | | | |
|---|---|---|---|
| **M15** | ■ | Blog Post UNIVIE[14] | ✓ |
| | | New Dissemination Measures introduced<br>Introduction of Dissemination KPIs<br>Implementation of a Blog, reachable via http://blog.thepreciousproject.eu | ✓ |
| | ■ | Google statistics configured for web site | ✓ |
| | ■ | Newsletter subscription form deployed | ✓ |
| | ■ | Revised Twitter Account https://twitter.com/EUPrecious @EUPrecious | ✓ |
| | ■ | Public GitHub account for distribution of open-source elements created, reachable under https://github.com/preciousproject | ✓ |
| | ■ | Adaptation of xAAL website for content sharing and communication about development advances & inclusion of PRECIOUS-specific section[15] | ✓ |
| | ■ | Advisory Board (AB): All first round members invited (4 members) | ✓ |
| **M16** | ■ | Blog Post AALTO | ✓ |
| | ■ | Publishing of xAAL on PRECIOUS public GitHub page | ✓ |
| | ■ | Quarterly Dissemination Progress Report of Partners | ✓ |
| | ■ | Quarterly KPIs Check | ✓ |
| | ■ | Second invitation planning has started | ✓ |
| **M17** | ■ | Blog Post UH | ✓ |
| | | Contact established with H2020 or other research projects, including | ✓ |

[14] Blog posts will be promoted using our social media channels. First blog post will be at the end of March 2015.
[15] http://recherche.telecom-bretagne.eu/xaal/

| | | | |
|---|---|---|---|
| | | DAPHNE | |
| | ■ | First regular AB conference call | |
| **M18** | ■ | D2.2 Interim report on socio-economic factors and business models | ✓ |
| | ■ | D4.1 System architecture and design specification | ✓ |
| | ■ | Blog Post VHIR | ✓ |
| | ■ | Distribution of PRECIOUS Newsletter | ✓ |
| | ■ | Collaboration with existing projects systematically organised | ✓ |
| | ■ | Advisory Board (AB) set up and fully functioning (including a definition of the regular exchange format and procedures; extension in place, if practicable) | ✓ |
| **M19** | ■ | Blog Post IMT (e.g. on the presentation of xAAL results) | ✓ |
| | | Collaboration with first public health organisations (providing health guidelines, recommendations, advice, regulations, etc.) and/or insurances established[16] | |
| | | Collaboration with one or two more research projects in the e-Health domain established | ✓ |
| | ■ | Quarterly Dissemination Progress Report of Partners | ✓ |
| | | Quarterly KPIs Check | |
| **M20** | ■ | Blog Post FirstBeat | ✓ |
| | | 1st white paper has been released | |
| | ■ | Second regular AB conference call | |
| **M21** | ■ | Blog Post Campden BRI | ✓ |
| **M22** | ■ | Blog Post UNIVIE | ✓ |
| | ■ | Quarterly Dissemination Progress Report of Partners | ✓ |
| | ■ | Quarterly KPIs Check | ✓ |
| **M23** | ■ | Blog Post AALTO<br>First PRECIOUS Workshop[17] | ✓ |
| **M24** | ■ | Distribution of PRECIOUS Newsletter | ✓ |
| | ■ | News post on website regarding Plenary Meeting | ✓ |
| | ■ | Blog Post UH | ✓ |
| | ■ | D3.2 Final report on behavioural representation and virtual individual modelling | ✓ |
| | ■ | D3.4 Final motivational service design document | ✓ |
| | ■ | D5.1 End-to-end valuation plan | ✓ |
| | ■ | 1st PRECIOUS press release | |
| | | Established first contacts with start-up scene for later exploitation | |

[16] Collaboration discussions initiated at PRECIOUS stakeholders seminar in Vienna M27

[17] Rescheduled and held in M27 in Vienna

| | | | |
|---|---|---|---|
| | ■ | Publishing of video prototypes on website, blog and social media | ✓ |
| | ■ | Third regular AB conference call on feedback of implementation | ✓ |

**Phase 3** - Y3, M25-M36

| | | | |
|---|---|---|---|
| **M25** | ■ | Blog Post VHIR | ✓ |
| | ■ | Quarterly Dissemination Progress Report of Partners | ✓ |
| | ■ | Quarterly KPIs Check | ✓ |
| **M26** | ■ | Blog Post IMT | ✓ |
| **M27** | ■ | Blog Post FirstBeat | ✓ |
| | ■ | D4.3 Development report of mobile applications and feedback tools | ✓ |
| | ■ | D4.3 Development report of mobile applications and feedback tools | ✓ |
| **M28** | ■ | D2.5 Report on legislative investigators | ✓ |
| | ■ | Blog Post Campden BRI | ✓ |
| | ■ | Quarterly Dissemination Progress Report of Partners | ✓ |
| | ■ | Quarterly KPIs Check | ✓ |
| **M29** | ■ | Blog Post UNIVIE | ✓ |
| **M30** | ■ | Blog Post AALTO | |
| | ■ | Fourth regular AB conference call<br>Second PRECIOUS Workshop | ✓ |
| **M31** | ■ | Blog Post UH | ✓ |
| | ■ | Quarterly Dissemination Progress Report of Partners | ✓ |
| | ■ | Quarterly KPIs Check | ✓ |
| **M32** | ■ | Blog Post VHIR | ✓ |
| | | 2nd white paper has been released | |
| **M33** | ■ | Blog Post IMT | ✓ |
| | ■ | D4.2 System integration report | ✓ |
| **M34** | ■ | Blog Post FirstBeat | |
| | ■ | Quarterly Dissemination Progress Report of Partners | ✓ |
| | ■ | Quarterly KPIs Check | ✓ |
| **M35** | ■ | Blog Post Campden BRI | ✓ |
| **M36** | ■ | Blog Post UNIVIE | ✓ |
| | ■ | D1.5 Final Project Report | ✓ |
| | ■ | D2.3 Final Report on socio-economic factors and business models | ✓ |
| | ■ | D5.2 System validation report | ✓ |
| | ■ | D6.2 Final dissemination and exploitation report | ✓ |

| | | | |
|---|---|---|---|
| | ■ | 2nd PRECIOUS press release | |
| | ■ | Final Dissemination Progress Report of Partners | ✓ |
| | ■ | Final KPIs Check | ✓ |

**Legend**

- ■ Deliverables
- ■ Collaboration/Interaction with the AB and other associated boards
- ■ Validation against success criteria
- ■ Marketing, Website, Social Media, Press, etc.

## 4.3. Validation against KPIs

The table in this Section reviews the actual performance of the dissemination and exploitation activities against previously defined KPI targets (see Appendix V: Dissemination & Exploitation KPIs). The first table (Table 4) shows the symbols used in the KPI table to represent different level of achievement of KPI targets.

Table 4 Symbols used for different KPI achievement levels

| **Symbols and KPI targets** | |
|---|---|
| ■ | Underachieved |
| ■ | Just missed targets |
| 👍 | Target achieved |
| ★ | Overachievement |
| □ | Not applicable, change of dissemination or exploitation plan or measures |

Based on this assessment a series of items need to be raised in the next consortium-internal discussions. Countermeasures are especially required in the exploitation area, which also results from the extension of the exploitation scope due to the valuable inputs of the reviewing team.

Social media interactions needs to be increased and more tailored. This will be achieved by using the vehicle of a project blog to create own content to be distributed via various kinds of social media channels. Moreover, more interaction by project partners is expected on those lists, e.g. sharing their research results and publications when they appear (which is easier to achiever in Y2 and Y3).

Table 5 Validation against KPIs

| Index | KPI | Final Status | Results and Comments |
|---|---|---|---|
| ST1 | Number of scientific publications (conference papers, journal papers, book chapters, white papers etc.) | ★ | > 20 peer-reviewed conference/workshop paper submissions<br>12 poster presentations<br>>10 published journals and book chapters<br>More journal submissions pending after project |
| ST2 | Number of other external publications | | |
| ST5 | Number of tutorials, workshops, presentations, webinars, etc. | | |
| ST3 | Number of project white or position papers | □<br>■ | Focus changed to partner-produced project whitepapers, technical notes and book chapter |
| ST4 | Number of partner-specific white paper | | |
| DC1 | Dissemination at food networks or other domain networks | 👍 | Over 8 disseminations including multiple disseminations by Campden, VHIR, EuroFIR |
| DC2 | Dissemination to end-users (e.g. via dedicated institutions or associations) | | |
| SE1 | Number of participated or hosted events | □ | KPI dropped due to possible double country with STx KPIs |
| IE1 | Number of participated events and work meetings | 👍 | >15 events participated |
| IE2 | Number of hosted events | 👍 | 2 in Y3 |
| M1 | Number of newsletters | 👍 | 6 project newsletters |
| M2 | Number of posters for non-scientific audiences | ★ | >10 |
| M3 | Number of press releases | ■ | 0 (No common coordinated project press release, but individual press release some of the organisations) |
| M4 | Number of blog posts | 👍 | 13 posts |
| M5 | Number of videos, leaflets, etc. | 👍 | 3 |

| Index | KPI | Final Status | Results and Comments |
|---|---|---|---|
| M6 | Number of referring websites | ☐ | yet to be assessed |
| SM1 | Number of Facebook Likes | ■ | 96 |
| SM2 | Number of Facebook Posts | 👍 | 50 (50% of those in Y3) |
| SM3 | Number of LinkedIn group members | ■ | 144 |
| SM4 | Number of LinkedIn Posts / Discussions | ◘ | 35 |
| SM5 | Number of Twitter Followers | ★<br>☐ | Official: 69<br>Loose discussion account: n/a |
| SM6 | Number of Twitter Posts | ■<br>☐ | Official: 46<br>Loose discussion account: n/a |
| WE1 | Number of visits | | *Analytics not available at time of publishing of deliverable* |
| WE2 | Time spent on website | | *Analytics not available at time of publishing deliverable* |
| CO1 | Number of project liaisons | 👍 | 3 collaborations |
| CO2 | Source code projects shared with other projects and scientific community (e.g. via Open Sourcing) | ■ | 1 Open Source project released by IMT |
| CO3 | Number of e-mail exchanges with other projects | ☐<br>☐ | *Figures has not yet been assessed in the previous iteration due to loss of track in number adhoc partner discussions.* |
| CO4 | Meetings, telephone conferences, etc. | | |
| CE1 | Exchange with start-up scene | 👍 | Start-up at UNIVIE and hackathon event |
| CE2 | New product developments around PRECIOUS or integration in existing products / product developments | ★ | 1 activity to influence a product initiated by Firstbeat.<br>Additional product exploration at AALTO, UNIVIE and IMT |
| CE3 | Contribution to standards or creation of new standards | ◘ | 0 |

| Index | KPI | Final Status | Results and Comments |
|---|---|---|---|
| CE4 | Personnel or in-house trainings on PRECIOUS topics and/or outcomes | ☐ | 0 |
| CE5 | Integration of PRECIOUS context in academic teaching and education activities | ★ | 3 periodically-held lectures (1 already held, 2 starting with March), relating bachelor thesis started, several bachelor and master students working in the context, one PhD started (all by UNIVIE). Additional MSc/doctoral works started/completed at Aalto, HU and IMT |
| CE6 | Follow-up research project or activities formulated and submitted | ★ | 1 EC H2020 project running (with 2 partners from PRECIOUS consortium) plus a number of other EC and national project proposals submitted |

# 5. Conclusions and Future Actions

## 5.1. Summary Discussions

The final dissemination and exploitation has noted some significant increase in the scope and scale of activities since the interim deliverable (D6.1) was presented in the first half of the project. This is attributed to the fact that the gradual realisation of the PRECIOUS aims and objectives produced a body of results which was considered worthy contributions to various dissemination events and publications. Additionally, the scientific merit and commercialisation potential of some of the results allowed the project initiate both research and commercial exploitation actions in the final year of the project.

Another driver that provided impetus to the dissemination and exploitation actions was the specification of dissemination and exploitation roadmap and definition of a set of KPIs for different activities. These measures enhanced coordination and planning timely dissemination and exploitation in the future. Moreover, it allowed for internal action calls for the cases where KPI targets were not being met in quarterly periodic checks.

The psychological and nutritional domains remained the most prominent areas for sharing of PRECIOUS results. The project also notable contributions emerging from PRECIOUS work on gamification in behavioural intervention apps and the interoperability of health and smart home devices in a residential setting. In these areas, the PRECIOUS researchers have been both oral presenters of peer reviewed work and in some cases invited speakers to events in those areas. This provided further evidence on the recognition of the PRECIOUS contributions from scientific and industry communities. The exchanges and feedback from peers and stakeholders in PRECIOUS organised dissemination events helped to further underline which of the project results held most impact potential.

## 5.2. Post-Project Dissemination and Exploitation Activities

The mid/long-term sustainability of the PRECIOUS project results is contingent on the PRECIOUS consortium to have in place clear exploitation actions inspired from the knowledge and results generated from the project. These exploitation action includes (but are not) MSc/PhD thesis, teaching/training services, follow-up project or project proposals, open source projects, ecosystem development, stakeholder engagement/interaction, development of new guidelines, policy recommendations, product/service development, spinoff/start-up initiation, and IPR actions (e.g. patents, trademarks, design rights, copyright). Furthermore, the continued analysis of some of the experimental or trial results from the project continues to provide new scientific insights or practical recommendations that will continue to be disseminated even after project ending. The rest of this Section outlines some of the dissemination and exploitation actions planned or being implemented by partners after the official ending of the project.

### *5.2.1. Aalto University (AALTO)*

MSc/PhD thesis:

Todor Ginchev from AALTO has started his doctoral studies in the areas Machine Learning and Computer Vision fields. The focus of Todor's research is built on the problem highlighted in PRECIOUS on food intake monitoring / detection using portable personal devices. There is significant research on Machine Learning applied to food detection from a digital image. Although this research has been proven to be very successful, the nowadays capabilities can be extended by applying Digital Image Processing not only to improve the food recognition, but to also offer the possibility of determining the location, size and shape of each food object.

Follow-up project / project proposals:

The H2020 RICHFIELDS project provides a platform for AALTO to continue to fine-tune and validate the PRECIOUS concept. The RICHFIELDS project will run until October 2018. Within RICHFIELDS project, AALTO will demonstrate how PRECIOUS data to is presented users and how the data is stored, as well as, how data gathered via the PRECIOUS platform is exposed to (or leveraged for applications) relevant external stakeholders and Research Infrastructures. The AALTO will also continue to be involved in proposals, with a focus on funding that promote commercialization of research results. One concrete opportunity for this is the TUTL instrument from the National Technology Agency of Finland (TEKES) which targets new knowledge and business from research ideas projects, whereby, the project group prepares the commercialisation of the research idea (more info https://www.tekes.fi/en/funding/research_organisations/new-knowledge-and-business-from-research-ideas/ ). This would be potentially useful channel for the AALTO research group to transition from research to commercialization of the PRECIOUS project results.

Spinoff/Startup:

In the immediate post-project phase AALTO team will be actively exploring mechanisms for creation of a spinoff to commercialise some of the PRECIOUS exploitable assets. This transition from research to spinoff will the supported by the Aalto Innovation Services (AIS). The AIS staff have previously provided support for preliminary patent search (e.g. for the PRECIOUS smart bracelet). The AALTO team will also leverage the Aalto Health Factory (http://elec.aalto.fi/en/research/health_factory/ ) to access some of the stakeholder groups from the local health-related industry to explore opportunities to partnering or licensing some of the PRECIOUS solutions.

### *5.2.2. Campden BRI*

Areas of potential exploitation are mainly based around Campden BRI's dissemination of the project to food industry stakeholders (Campden BRI members), and the organising of the seminar. In terms of going forward, the project has enabled Campden BRI to gain a greater understanding of nutritional guidelines across the EU, and a greater understanding of ethical approval processes in the UK which will enable Campden BRI to more effectively support

our members in terms of nutrition and ethics in Europe. The project has also enabled us to explore the potential to expand the types of consumer testing we can offer to include usability investigations, although this is in the early stages of exploration.

### *5.2.3. Firstbeat*

The current strategy of Firstbeat Technologies Ltd. aims to broaden its business segments from software provider targeting wellness (lifestyle) and sports coaching towards lifestyle-related diseases, such as, T2D and CVD considered in, that is, a more medical approach. The PRECIOUS-project has provided a valuable “a proof of concept” of usefulness of heart rate variability (HRV) –based lifestyle tracking for tailoring interventions for these medical problems. This was notably demonstrated during the use of the lifestyle assessment tool for PRECIOUS trials.

### *5.2.4. University of Helsinki*

- University of Helsinki partners will continue to work with the precious system in conducting additional n of 1 studies to identify how motivational tools within precious contribute to sustained use of the precious app. Subsequent features to be tested include altering timing, content, framing and autonomy support of notification-based messages delivered in the system.
- Ari Haukkala and Keegan Knittle will contribute to a project led by Nelli Hankonen (University of Tampere), which will utilize some of the tools in the Precious system to investigate how users can self-manage fluctuations in their motivation for health behaviours over time. (Grant title: Self-determined motivation for work and health: investigating fluctuations of motivation and identifying effective strategies for motivational self-management; Funded by: Academy of Finland)
- If funded, a grant submitted by Keegan Knittle will allow for the testing of the PRECIOUS system within behavioral weight loss treatments at the Helsinki Obesity Center.
- Johanna Nurmi will continue a collaboration with the University of Cambridge in analyzing the data obtained from the n of 1 trials.

### *5.2.5. Hospital Universitari Vall d’Hebron – Institut de Recerca Vall d’Hebron*

One scientific manuscript is being prepared in collaboration with Hospital Clinic of Barcelona. This manuscript is expected to address how the different principles and core elements of motivational interviewing have been included and implemented in different health applications from a critical scope. This manuscript is expected to be sent to one international scientific journal from with impact factor.

One project proposal deepen into the validation of an improved version of Precious system has been presented to a national competitive research funding grant (Fundació Mapfre, Becas larramendi 2016). Similarly, a research proposal has been submitted to the FTIP 2016. These two proposals have been designed as randomized controlled trials with higher

samples sizes than the Precious pilot study (carried out within the lifespan of Precious project). The aim of these two proposals is to test the effectiveness of Precious system and to retest its usability, satisfaction and acceptance. This new version will include a web interface. In both cases, the length of the study and the sample size will allow complex statistical analyses and to pursue statistical power and significance will be feasible.

### *5.2.6. Institut Mines-Telecom (IMT)*

In the continuation of the work achieved for the PRECIOUS project, two PhD thesis should begin at the spring and at the autumn of 2017, depending of the recruitment process of candidates. The first PhD thesis, in collaboration with the Technicolor company, is about collecting data in smart-home context and data consolidations for actigraphy of user's activity. In other words, it is about "small data" challenges. The second PhD thesis, in collaboration with the ESATIC institut, is about using a smart environment and humanoid robots to strengthen re-stimulation of children suffering of autism.

To pursue studies about improving well being using physiological data monitoring, IMT will also take advantage of the knowledge acquired during the PRECIOUS project to try to launch new projects focusing on monitoring sleep and detecting obstructive sleep apnea using connected devices. Some contacts have been met during conferences and could help. Particular efforts will be done to include acceptability in the potential future projects. Until now a 200k€ health regional project about bad sleep detection at home for cerebral palsy children has been accepted at the first step but rejected during the second step. We are considering other calls for project.

### *5.2.7. University of Vienna (UNIVIE)*

Post Y3, UNIVIE researchers will (1) further intensify the industry and stakeholder contacts made and (2) further pursue the start-up RobiMo GmbH (http://www.robimo.at) as described in the previous section as well as (3) the business cooperation with Go4Health (http://www.go-4-health.com/). Furthermore, subsequent publication efforts will be pursued to further introduce PRECIOUS results on different levels to the general public, industry and other stakeholders involved with health and health management.

# Appendix I: Exploitation & Dissemination Reporting Template

**Report Identifier**
- *<partner name or short name>*
- *<contact person>*
- *<reporting period>*

**Please report to:**
- patrick.zwickl@univie.ac.at *and*
- christopher.helf@univie.ac.at *and*
- hannes.weisgrab@univie.ac.at

**Process:**
Only *one report per partner* per *reporting period* proactively submitted by the contact person

**Frequency:** Every quarter, when you submit your effort sheets!

**Reporting dates:**
- 2015: Mar (for Feb), May, Aug, and Nov
- 2016: Feb, May, Aug, and [end of project]

**For all points, try to answer the following questions (if fitting):**
- *who*? (e.g. was presenting?)
- *what*? (e.g. was presented)
- *where*? (if appropriate)
- *when and in which frequency* (day or schedule)?
- *why*? (what was the purpose of the meeting? how does it relate to PRECIOUS?)
- *outcomes*? recommendations? research directions?

**Categories**:
- Activities: Primarily unilateral (we share some knowledge e.g. with the industry)
- Collaboration: We exchange knowledge or receive inputs

**Activities**
Dissemination

- **Scientific Publications** [already on the web site?]
  *<please list, preferable in IEEE format or comparable>*
- **Other External Publications**
  *<please list, preferable in IEEE format or comparable>*
- **Internal Publications / White papers / Technical reports**
  *<please list, preferable in IEEE format or comparable>*
- **Scientific presentations (external or internal)**
  *<please list>*

- **Press releases (and similar dissemination activities)**
  *<please list>*

- **Dissemination at food networks or other domain networks**
  *<please list>*

- **Dissemination to end-users (e.g. via dedicated institutions or associations)**
  *<please list>*

- **Participation at or hosting of (scientific/expert) workshops**
  *<please list>*

Exploitation

- **Presentation / poster at industry fora or events** (including standardisation bodies) with primarily non-scientific audience
  *<please list>*

- **Dissemination at interested industry partners**
  *<please list>*

- **Exploitation in the startup scene** (e.g. meetups with local startups, startup funding agencies, students targeting to create a startup, etc.)
  *<please list>*

- **Products created or adapted, or product developments influenced**
  *<please list>*

- **Integration in lecturing / teaching** (university teaching, bachelor theses, master theses, PhDs, practical exercises, etc.)
  *<please list>*

- **Personnel training, in-house training**

- **Contribution to standards or guidelines for the domain / Exchange with bodies involved in corresponding activities**
  *<please list>*

- **Open-Sourcing of code**
  *<please list, describe, license, link>*

*[For bilateral exchange with food networks, health organisations or insurances, see the dedicated section below. Unilateral exploitation or dissemination activities may be added here.]*

# Appendix II: Stakeholder Message Map

Table 6: Stakeholder "Message Map"

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

| | | | | |
|---|---|---|---|---|
| | | | | Conferences/Webinars<br>Peer review literature<br>Professional literature/magazines<br>PRECIOUS website<br>Direct communication<br>Workshops |
| 3 | SMEs / Providers / Software developers | *Engagement:* explain how they would use PRECIOUS to generate business, and describe their technical requirements<br>*Action:* 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 | Content<br>Case studies/examples<br>Research evidence<br>Channels<br>Direct communication<br>Trade shows<br>Tech-healthcare magazines<br>Workshops<br>PRECIOUS website/social media |
| 4 | Researchers | *Engagement:* depict how PRECIOUS could interact with their current research activities, or how their work could be | The research community is actively engaged in areas such as preventive care, eHealth and sensor | Content<br>Research evidence |

| | | | | |
|---|---|---|---|---|
| | | beneficially integrated into PRECIOUS<br><br>*Action:* Reference and integrate PRECIOUS in their publications | technology. A number of scientific conferences are also running in these areas. Enhance PRECIOUS visibility. | Joint research work<br><br>Future projects<br><br><u>Channels</u><br><br>Scientific conferences<br><br>Peer reviewed journals<br><br>Research Platforms<br><br>LinkedIn Group |
| 5 | Corporate Employers, Employee / diversity representatives, NGOs, | *Engagement:* Disclose potential deployment and integration scenarios of PRECIOUS<br><br>*Action:* Recommend / guide integration of PRECIOUS in daily life (e.g. work breaks, school) | Aware of requirements on preventive care. Need to be convinced of the efficacy of PRECIOUS | <u>Content</u><br><br>Deployment and integration in daily life strategies<br><br><u>Channels</u><br><br>Expert Interviews<br><br>Direct communications<br><br>Reports |
| 6 | Media | *Engagement:* Broaden PRECIOUS recognition in general public<br><br>*Action:* Distribute press releases and reference PRECIOUS in articles | Public health is currently a media 'hot topic', although they are currently unaware of PRECIOUS. | <u>Content</u><br><br>Case studies/examples<br><br>Broaden project recognition |

| | | | | |
|---|---|---|---|---|
| | | | | Channels<br>Issue press releases<br>Social media |
| 7 | Public healthcare organisations | *Engagement:* Highlight possible fields of applications and guide PRECIOUS use cases and deployment strategies<br>*Action:* Point out problem areas relevant to PRECIOUS | Aware of pressures on public healthcare services due to chronic diseases and familiar with the concept of preventive care. Need to be convinced of the efficacy of PRECIOUS. | Content<br>Research evidence<br>Reports<br>Channels<br>Direct communications<br>Professional literature/magazines |
| 8 | Policymakers, Ministries | *Engagement:* Guide legal questions of PRECIOUS and possible integration into government programs<br>*Action:* Ensure legal framework for services like PRECIOUS | Aware of pressures on government budgets due to chronic diseases and familiar with the concept of preventive care. Need to be convinced of the efficacy and economic benefit of services like PRECIOUS. | Content<br>Case studies/examples<br>Research evidence<br>Reports<br>Channels<br>Direct communications |
| 9 | Health insurances | *Engagement:* Illustrate potential economic benefits of PRECIOUS services | Aware of pressures on budgets due to chronic diseases and familiar with the concept of preventive | Content:<br>Case studies/examples |

| | | | | |
|---|---|---|---|---|
| | | *Action:* Offer bonus system to policyholders for use of PRECIOUS system | care. Need to be convinced of the economic benefit of services like PRECIOUS | Economic impact values<br><br>Channels:<br><br>Expert Interviews<br><br>Direct communications |

# Appendix III: Dissemination Activities

**Long or short papers (for journal papers, conference papers etc.):**

**Year 1**

**Q1:**

- None

**Q2**:

- Kärkkäinen T., Ott J., "Liberouter: Towards Autonomous Neighborhood Networking," 11th IEEE/IFIP Annual Conference on Wireless On-demand Network Systems and Services. WONS 2014. 2-4 April 2014 Obergurgl, Austria.

**Q3**:

- None

**Q4**:

- Kuczora S., Finglas P., Ramos C., Requena J. C., Ginchev T., "Development of a preventive healthcare system to promote healthy lifestyles: Measurement of food intake" 17th IUFoST World Congress of Food Science and Technology (World Food Congress), Montreal, Canada, 17-21 August, 2014
- Stok, M., König, L., Nurmi, J. & Müller, A. M., "Leveraging Mobile Technology and Social Media in Behavioral Research", Workshop report of the The European Health Psychologist: Create workshop, 24-26th August, 2014, Innsbruck, Austria
- Marcin Nagy, Teemu Kärkkäinen, and Jörg Ott. 2014. Enhancing opportunistic networks with legacy nodes. In Proceedings of the 9th ACM MobiCom workshop on Challenged networks (CHANTS '14). ACM, New York, NY, USA, 1-6, September 2014.
- Teemu Kärkkäinen and Jörg Ott. 2014. Shared content editing in opportunistic networks. In Proceedings of the 9th ACM MobiCom workshop on Challenged networks (CHANTS '14). ACM, New York, NY, USA, 1-6, September 2014.

**Year 2**

**Q1:**

- Stok, M., König, L., Nurmi, J. & Müller, A. M. (2014). *"*Leveraging Mobile Technology and Social Media in Behavioral Research*"*. The European Health Psychologist. 16, 6, p. 260-262 3 p.

**Q2**:

- Lohr. C., Tanguy, P., Kerdreux, J., "xAAL: A Distributed Infrastructure for Heterogeneous Ambient Devices", Journal of Intelligent Systems. Volume 24, Issue 3, Pages 321–331, March 2015.
- Zwickl, P., Reichl, P., Skorin-Kapov, L., Dobrijevic, O., and Sackl, A. "On the Approximation of ISP and User Utilities from Quality of Experience," Proc. of the 7th International Workshop on Quality of Multimedia Experience, IEEE, Pilos, Greece, 26-29 May 2015.
- Varela, M., Zwickl, P., Reichl, P., Xie, M., and Schulzrinne, H. "Experience Level Agreements (ELA): The Challenges of Selling QoE to the User," ICC Workshops 2015, Workshop on Quality of Experience-based Management for Future Internet Applications and Services (QoE-FI), IEEE, Kuala Lumpur, Malaysia, 23-27 May, 2016 .

**Long or short papers (for journal papers, conference papers etc.):**

**Q4**:

- Momeni, E., Kalchgruber, P., Ramsauer, D., and Rawassizadeh, R. "Leveraging Social Affect for Identifying Individual Mood", 11th International Conference on Semantic Systems, 1st Workshop on Data Science: Methods, Technology and Applications, Vienna Austria, September 15 - 17, 2015
- Helf, C., Zwickl, P., Hlavacs, H. and Reichl, P: Towards a Framework for Gamification-Based Intervention Mapping in mHealth, 14th International Conference on Entertainment Computing (ICEC), 30 September - 2 October 2015, Trondheim, Norway.
- Helf, C., Zwickl, P., Hlavacs, H. and Reichl, P., "mHealth Stakeholder Integration: A gamification-based Framework-approach towards behavioural change", The 13th International Conference on Advances in Mobile Computing and Multimedia, 11 - 13 December 2015, Brussels, Belgium.

**Year 3**:

**Q1**:

- Holmes C., 'Electronic tools for healthy choices' The journal of the Institute of Food Science and Technology Vol 29, Issue 4 December 2015.
- Tanguy P., Lohr C. and Kerdreux J. A Transparent home Sensors/Actuators layer for Health & Well-being services. 10th EAI International Conference on Pervasive Computing Technologies for Healthcare, 2016 [*rejected*]

**Q2**:

- Nurmi, J., Hagger, M., Haukkala, A., Araújo-Soares, V. & Hankonen, N. "Relations Between Autonomous Motivation and Leisure-Time Physical Activity Participation: The Mediating Role of Self-Regulation Techniques". Journal of Sport & Exercise Psychology, Volume 38, Issue 2, April 2016.

**Q3**:

- Helf, C., Hlavacs, H., Apps for life change: Critical review and solution directions, Entertainment Computing, Volume 14, May 2016.
- P. Tanguy, C. Lohr and J. Kerdreux, "A Transparent home Sensors/Actuators layer for Health & Well-being services", in EAI International Conference on IoT and Big Data Technologies for HealthCare, 15-16 June 2016, Budapest, Hungary.
- Simonnet, M., Gourvennec, B., & Billot, R. Connected heart rate sensors to monitor sleep quality. In CHASE: Conference on Connected Health: Applications, Systems and Engineering technologies. Washington, DC, USA. June 2016.
- Simonnet, M., Gourvennec, B., & Billot, R. Heart rate sensors acceptability: data reliability versus ease of use. In BSN: Body Sensor Network Conference. San Francisco, California, USA. June 2016.
- Lohr C., Tanguy P. and Kerdreux J., Choosing security elements for the xAAL home automation system, 13th IEEE International Conference on Advanced and Trusted, Computing (ATC 2016), July 18.21, 2016, Toulouse, France.

**Q4**:

- Falco, A., Nurmi, J., Haukkala, A., Ravaja, N. (2016). The effects of nutritional information delivered through a game-like educational platform on emotional and attentional responses to food images"". Submitted to Computers in Human Behavior Journal.

**Long or short papers (for journal papers, conference papers etc.):**

- Knittle K, Morrison L, Inauen J, Warner LM, Kassavou K, Naughton F, & Michie S. mHealth: past success, future challenges, and the role of the EHPS. Overview paper submitted for a special mHealth-themed issue of The European Health Psychologist.

**Poster Presentations:**

**Year 1**:

**Q1:**

- None

**Q2:**

- None

**Q3:**

- Lusilla, P., Castellano-Tejedor, C., Helf, C., Zwickl, P., Hlavacs, H., Haukkala, A., & Ravaja, N. “Integrating Motivational Techniques in gamification systems for behaviour change “, Poster communication presented at ICMI 2014 International Conference on Motivational Interviewing. Amsterdam, June 16-18, 2014.

**Q4:**

- None

**Year 2**:

**Q2:**

- Haukkala, A., Nurmi, J., Falco, A., Ravaja, N., Myllymäki, T., Costa-Requena, J., Lusilla, P., & Kuczora, S. "Testing a sensor based application for physical activity and food intake with an N = 1 study". The Science of Behaviour Change Conference 2015, Harnessing Digital Technology for Health Behaviour Change, London, UK, February 23-24, 2015.

**Q3**:

- Ramos C., Finglas P., Costa J. "The development of a preventive care infrastructure based on ubiquitous sensing – the PRECIOUS project", Digital and Heath Care Congress 2015, King's Fund – 16–17 Jun 2015**,** London, UK.

**Q4:**

- Knittle, K., Dombrowski, S., Nurmi, J., Beattie, M., Hankonen, N. & Crutzen, R. "A meta-analysis examining effective interventions to promote motivation for physical activity behavior change", 9th Conference of the EHPS: Principles of Behaviour Change in Health and Illness, Limassol, Cyprus, 1st - 5th September 2015.
- Nurmi, J., Haukkala, A., Araujo-Soares, V., Hagger, M. & Hankonen, N. “Why do youth high in self-control exercise more? – Motivation quality and Self-Regulatory Skills as mediators” 9th Conference of the EHPS: Principles of Behaviour Change in Health and Illness, Limassol,

**Poster Presentations:**

Cyprus, 1st - 5th September 2015.

- Ramos C., Finglas P., Costa J.; The development of a preventive care infrastructure based on ubiquitous sensing – the PRECIOUS project, 5th MoniQA International Conference: "Food and Health - Risks and Benefits", 16-18 September 2015, Porto, Portugal.
- Nurmi, J., Hagger, M., Haukkala, A., Araújo-Soares, V. & Hankonen, N. "Why do Youth High in Self-Control Exercise More? Motivation Quality and Self-Regulatory Techniques as Mediators". Finnish Health Psychology Conference, October, 2015, Helsinki, Finland.

**Year 3**:

**Q1**:

- None

**Q2**:

- Nurmi, J., Knittle, K., Helf, C., Zwickl, P., Lusilla-Palacios, P., Castellano-Tejedor, C., Costa-Requena, J., Myllymäki, T., Ravaja, N. and Haukkala, A. “A Personalised, Sensor-Based Smart Phone Intervention for Physical Activity and Diet: PRECIOUS N-of-1 Trial.” Second Behaviour Change Conference: Digital Health and Wellbeing, London, UK, 24-25 February 2016.
- T. Ginchev, "Smart Bracelet with Physical Activity and Food Intake Tracking Capabilities" Poster Presentation (Best Poster Award), Winter Research Day of Aalto University Schools of Electrical Engineering, 2nd March 2016, Espoo, Finland

**Q3**:

- Ari Haukkala, Johanna Nurmi, Keegan Knittle, Alessio Falco, Christopher Helf, Patrick Zwickl, Pilar Lusilla Palacios, Carmina Castellano Tejedor, Jose Costa-Requena, Tero Myllymäki, Niklas Ravaja. A Pilot study using N-of-1 design for PRECIOUS Smart Phone device for Physical Activity and Diet. 8th Nordic Health Promotion Research Conference (NHPRC), 20th – 22nd of June 2016, Jyväskylä Finland.

**Q4**:

- Johanna Nurmi presented a poster on Precious N-of-1 study design in the European Association of Social Psychology Summer School in 01-13 August 2016, Exeter, UK.
- Moreno, J., Castellano-Tejedor, C. & Lusilla-Palacios, P. Motivational Interviewing for Fostering Adherence to a Personalised, Sensor-based Smart phone Intervention for Healthy Lifestyles: The PRECIOUS project. III Forum GETEM, 30th September - 1st October 2016, Madrid (Spain)
- Castellano-Tejedor, C., Moreno, J. & Lusilla-Palacios, P. Aspects from the PRECIOUS project app based on motivational interviewing. III Forum GETEM, 30th September - 1st October 2016, Madrid (Spain)

**Other Presentations:**

**Other Presentations:**

**Year 1**

**Q1:**

- None

**Q2**:

- Heikki Pakkala, Carlos Ramos, Oral Presentation of the PRECIOUS project at the EuroFIR AISBL Scientific Symposium 2014 - "Better Food Data and Tools to Support Food Health Research, Labelling and Health Claims in Europe" Brussels, Belgium, 27th March 2014.

**Q3**:

- None.

**Q4**:

- Castellano-Tejedor, C. "Motivational interviewing meta-analysis in health and primary care settings" Oral presentation at II Forum Getem, Santiago de Compostela, Spain, 24-25 October 2014.

**Year 2**:

**Q1:**

- Nurmi, J., Haukkala, A., Araújo- Soares, V. and Hankonen, N. "Physical activity: The role of autonomous motivation and self-regulation strategies." The Social Psychology Days, 21-22 November 2014, Helsinki, Finland.

**Q2:**

- Haukkala, A. "How MYDATA transforms to behaviour - behaviour change techniques at genomic and mHealth era" (In Finnish) University of Helsinki, Tiedekulma: Terveystieto bitteinä – Digihealth on jo täällä Presentation and panel discussion. 25, February, 2015 https://www.youtube.com/watch?v=236GPyb3BPA
- Mutafungwa, E., "Presentation on the PRECIOUS Project," EUROFIR AISBL Food Forum Symposium, March 2015, Brussels, Belgium.
- Nurmi, J. & Knittle, K. "How to support motivation for healthy lifestyles with a smartphone? Techniques from Motivational Interviewing. (PRECIOUS; PREventive Care Infrastructure based On Ubiquitous Sensing)" in the Human-Computer Interaction network, HCI seminar, 9 Apr 2015, Helsinki region.
- Nurmi, J. "Preventive Care Infrastructure based On Ubiquitous Sensing – Motivation in your

**Other Presentations:**

pocket". The Self-Determination Theory Research Meeting with Prof. Richard Ryan, 13th May 2015, Aalto University, Helsinki region.

**Q3:**

- Haukkala, A., "Yksittäisen tapauksen (N=1) tutkimusasetelmat ihmisen käyttäytymisen tutkimuksessa" (N of 1 study design at examining human behaviour change). Seminar at discipline of Statistics 15.4.2015 University of Helsinki, Department of Social Research
- Requena, J., PRECIOUS project presentation at the eHealth Week special session on Social Networking and Gaming: Opportunities for Patient Engagement, May 2015, Riga, Latvia.
- Holmes C. and Mutafungwa E. "PRECIOUS Project overview and potential opportunities for Collaboration"- 29th June, FP7 QUALIFY workshop, JSI- Jamova cesta 39- Ljubljana ,1st July 2015

**Q4:**

- Lusilla, P. MI and shared decision making in chronically ill patients. Is it mhealth a key factor for treatment adherence?, Polish Association of Motivational Interviewing (PAMI)19 Oct 2015.
- Haukkala, A., “Miten rakentaa teoriaan perustuvaa mobiilisovellusta elintapojen muuttamiseen: PRECIOUS - hanke (How to build mobile app for lifestyle changes using theory based methods - Case PRECIOUS)” Finnish Health Psychology Conference, 30 October 2015, Helsinki, Finland.
- Knittle, K., Dombrowski, S., Nurmi, J., Beattie, M., Hankonen, N. & Crutzen, R. “Targeting Intention, Motivation and Engagement in Physical Activity Interventions (TIME-PAI): A meta-analysis examining effective intervention components”. Finnish Health Psychology Conference, 30 October 2015, Helsinki, Finland.
- Lusilla, P., Castellano-Tejedor, C. Motivational interviewing & gamification principles. Presentation at MINT Forum – Motivational Interviewing Network of Trainers – Berlin, Germany. October 2015.
- Lusilla, P., Castellano-Tejedor, C. Motivational interviewing and chronic diseases; New approaches for management. Presentation at the National Congress of Motivational Interviewing Association, Poland. October 2015.

**Year 3**:

**Q1**:

- UH: Presentation at the Northern Dimension Partnership in Public Health and Social Well-being expert group on non-communicable diseases http://www.ndphs.org/?mtgs,ncd_eg_10_meeting 01 - 02 December 2015, Turku, Finland

**Q2**:

- Holmes, C. “EU funded project: PRECIOUS “. Campden BRI Sensory & Consumer Member Interest Group (MIG), 4/02/16, Chipping Campden, UK.

**Q3**:

- None

**Q4**:

- Johanna Nurmi presented the results of the usability studies conducted at University of Helsinki during Summer of 2016, as part of a symposium on mHealth at the conference of the European Health Psychology Society, 23-27 August 2016, Aberdeen, UK

| **Other Presentations:** |
| --- |
| • Keegan Knittle gave an overview talk and acted as a discussant during a symposium on mHealth at the conference of the European Health Psychology Society, 23-27 August 2016, Aberdeen, UK<br>• Moreno, J., Castellano-Tejedor, C. & Lusilla-Palacios, P. Entrevista Motivacional y smartphone en prevención de salud ¿Es posible? El ejemplo del proyecto PRECIOUS. [Motivational interviewing and smartphones for health prevention. Is it possible? The PRECIOUS project example]. III Forum GETEM, Madrid (Spain) 30th September - 1st October 2016<br>• Charlotte Holmes presented at Campden BRI's Food Service Member Interest Group Autumn meeting, giving a project update and results of Year 3 study, 6 October 2016. |

# Appendix IV: Advisory Board Profile

| AB member photo | Name / Affiliation | Brief Profile |
|---|---|---|
|  | **Dr. Joan Colom**<br><br>*Program on Substance Abuse*<br><br>*Public Health Agency of catalonia* | 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[18] |
|  | **Sabri Abarkan**<br><br>*VivSan GmbH* | Sabri has been active in the field of nutrition and physical activity for children for six years. He is the founder of vitakid an online platform for healthy nutrition and physical activity for children which is used in Germany and Spain. Since 2008, he has been involved in research aiming to build IT-solutions to help fight childhood obesity. The platform developed and invented by him received the Innovation prize of the Universidad Católica de San Antonio in 2012 in Murcia, Spain. Sabri holds a Master in Economics and a Master of Law (Finance). Currently, he is focusing on widening the scope and availability of vitakid and participating in European research projects. |
|  | **Ólafur Andri Ragnarsson**<br><br>*Betware*<br><br>*Reykjavík University* | Mr. Ragnarsson is the co-founder of and chief software architect at Betware, Reykjavik University. Betware is a company that has specialised on online platforms for online gaming and lottery. Betware is today one of the leading companies in this area. Mr. Ragnarsson is further affiliated with the Reykjavík University's School of Computer Science 1989 where is he actively teaching classes. |
|  | **Barbara Koroušic**<br><br>Jožef Stefan Institute | Assistant Prof Barbara Koroušić Seljak is a Assistant Professor in Computer Science at the Computer Systems Department, Jožef Stefan Institute, in Ljubljana (Slovenia), contributing an expertise in real-time systems, software engineering, and e-health. Barbara has been active in the field of food science and nutrition for ten years. She is an author of the Slovenian web application for dietary assessment and menu planning, and is responsible for compilation and management of national food composition data. Since |

18 http://www20.gencat.cat/portal/site/salut/menuitem.81a4919118f3026913a90f10b0c0e1a0/?vgnextoid=afc125837e73f310VgnVCM2000009b0c1e0aRCRD&vgnextchannel=afc125837e73f310VgnVCM2000009b0c1e0aRCRD

| AB member photo | Name / Affiliation | Brief Profile |
|---|---|---|
| | | 2005, she has been involved in several national and EU-funded research projects on children's, workers' and clinical nutrition. She is a member of the Executive Board of EuroFIR AISBL and the Slovenian Society for Clinical Nutrition and Metabolism. |
|  | **Dr. Falko Sniehotta**<br><br>*Newcastle University* | 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/ihs/people/profile/falko.sniehotta). |
|  | **Dr. Olli Pitkänen**<br><br>*IPR University Center, Aalto University* | Olli works as Research Director at IPR University Center, Aalto University. He prepares and leads multidisciplinary research projects aiming at enabling business, helping people, and making the world a better place. He is a lawyer and a member of the board in several companies (Nixu, BookIT) and has had an opportunity to participate several versatile business decision making processes and strategy development. He is well-experienced in different kinds of organizations, their finances, and strategies. |
|  | **Kirsi Mikkonen**<br><br>*Ericsson* | Kirsi Mikkonen has a long career in practical work and research of organization management. Her special topics include Agile coach, being Scrum master, Kanban coach managing complex change initiatives and managing 3rd party supplier, resource and site strategies. She worked as External Funding Manager at Oy LM Ericsson Ab (up to October 2016). |

# Appendix V: Dissemination & Exploitation KPIs

The corresponding KPIs and relating success criteria are specified as follows:

Table 7: The PRECIOUS dissemination and exploitation KPIs (including success criteria)

| Channel | | KPI | | Success Criteria |
|---|---|---|---|---|
| **Scientific Targets, including conferences, events, publications & papers**<br><br>*[See target conferences, journals and events]* | ST1 | Number of scientific publications (papers, white papers etc.) | ■■ | ≥ 2 submission per quarter<br><br>≥ 1 submission per year at flagship and/or target conferences or journals of relevant domains |
| | ST2 | Number of other external publications | ■■ | |
| | ST3 | Number of project white or position papers | ■ | 2 position papers in total:<br><br>1 Mid of project<br>1 Towards the end of Y3<br><br>≥ 1 Tutorial |
| | ST4 | Number of partner-specific white paper | ■ | |
| | ST5 | Number of tutorials, workshops, presentations, webinars, etc. | ■■ | ≥ 1 presentations per quarter |
| **Domain-specific channels** | DC1 | Dissemination at food networks or other domain networks | ■■ | ≥ 2 per year |
| | DC2 | Dissemination to end-users (e.g. via dedicated institutions or associations) | ■■ | Representative number of users should be reached |
| **Scientific events** (e.g. workshops, project exchanges, …) | SE1 | Number of participated or hosted events | ■■ | ≥ 1 per quarter |
| **Industry events, industry fora & events with public organizations**<br><br>*(including start-ups)* | IE1 | Number of participated events and work meetings | ■■ | ≥ 1 per quarter |
| | IE2 | Number of hosted events | ■■ | ≥ 1 (total) |
| **Marketing** | M1 | Number of newsletters | ■ | ≥ 2 newsletters |
| | M2 | Number of posters for non-scientific audiences | ■■ | ≥ 1 per year |

| Channel | | KPI | | Success Criteria |
|---|---|---|---|---|
| | M3 | Number of press releases | ■ | ≥ 3 (total) |
| | M4 | Number of blog posts | ■ | ≥ 1 per month |
| | M5 | Number of videos, leaflets, etc. | ■ | ≥ 2 items (total) |
| | M6 | Number of referring websites | ■ | Multiple partner websites, group websites, partner web sites, code project sides are intended to point to the PRECIOUS site or its social media channels or specific materials |
| **Social Media** | SM1 | Number of Facebook Likes | ■ | ≥ 50 after year 2<br>≥ 100 after year 3 |
| | SM2 | Number of Facebook Posts | ■ | ≥ 6 per quarter |
| | SM3 | Number of LinkedIn group members | ■ | ≥ 100 after Y1<br>≥ 150 end of project |
| | SM4 | Number of LinkedIn Posts / Discussions | ■ | ≥ 6 per quarter |
| | SM5 | Number of Twitter Followers | ■ | Official account:<br>≥ 50 after year 2<br><br>Loose discussion account:<br>≥ 2500 |
| | SM6 | Number of Twitter Posts | ■ | Official account:<br>≥ 6 official per quarter<br><br>Loose discussion account:<br>≥ Several per week |
| **Website** | WE1 | Number of visits | ■ | ≥ 1500 per year |
| | WE2 | Time spent on website | ■ | average visit ≥ 1:30 minutes |
| **Cooperation** | CO1 | Number of project liaisons | ■ | ≥ 3 project liaisons |
| | CO2 | Source code projects shared with other projects and scientific | ■■ | ≥ 2 code projects (total) |

| Channel | | KPI | | Success Criteria |
|---|---|---|---|---|
| | | community (e.g. via Open Sourcing) | | |
| | CO3 | Number of e-mail exchanges with other projects | ■ | ≥ several per quarter |
| | CO4 | Meetings, telephone conferences, etc. | ■ | ≥ 1 per quarter per cooperation partner |
| **"Classical" Exploitation** | CE1 | Exchange with start-up scene | ■■ | ≥ 2 (total)<br>*(starting point Finnish start-up scene)* |
| | CE2 | New product developments around PRECIOUS or integration in existing products / product developments | ■■ | ≥ 1 (total) |
| | CE3 | Contribution to standards or creation of new standards | ■■ | ≥ 1 (total) solution that is potentially standardisable<br>OPTIONAL: Standards within project duration |
| | CE4 | Personnel or in-house trainings on PRECIOUS topics and/or outcomes | ■■ | Optional |
| | CE5 | Integration of PRECIOUS context in academic teaching and education activities | ■■ | ≥ 3 bachelor and master theses started<br>≥ 1-2 PhDs started<br>≥ 4 periodically-held lectures adapted or created |
| | CE6 | Follow-up research project or activities formulated and submitted | ■ | ≥ 1 (total) |

**KPIs Legend**

- ■ Collection of project-wide figures
- ■ Collection of per-partner figures