



the
precious
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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 throughout the entire project period.

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In the spotlight: WP6- Dissemination and Exploitation

Apart from intensive preparation in terms of finalising the implementation of PRECIOUS services and the various studies to be conducted within the PRECIOUS project in the last few months, the consortium have put great emphasis on creating visibility of our concepts and ideas in the industry. In January 2016 for instance, the University of Vienna held a workshop at their premises titled “Next Generation eHealth Workshop”, which included key players from industry and public entities operating within Austria.



The key goal of this workshop was to not only disseminate results of our project, but to create potential opportunities for exploitation of PRECIOUS' app and ecosystem as well as gathering feedback from respective experts. In addition to presenting the scientific theories and literature underlying our approach, we showed live demos of apps and sub-apps. Furthermore, we tried to include the participants in the design and idea generation process within an interactive element where attendees were asked in groups to design their own health or medical app. A final hands-on part completed the workshop, during which all the participants had the chance to try our services themselves. The feedback was overwhelming, and a large number of interesting discussions were triggered with regards to both business opportunities and potential obstacles for a go-to-market strategy.



This is just one example of get-togethers with players interested in the scientific results and commercialisation of PRECIOUS. We are looking forward to our next big free seminar to be held on the 23rd of September 2016. The event will include more live demonstrations of the new PRECIOUS tool and discussions around our key learning's. The seminar will be held in the UK (exact location to be confirmed), but if you are interested in attending, please let charlotte.holmes@campdenbri.co.uk know and further details will be provided to you in due course.

Progress and achievement

WP2- Requirements Identification and Socio-Economics

In February of this year, we published a deliverable outlining the various elements of legislation that would potentially apply to the PRECIOUS system, a number of which are themselves undergoing amendment to reflect current and future technological developments.

In order for the PRECIOUS system to be placed on the market there are many aspects to be considered, including; the required appliance and operability standards to be met, data protection requirements (including security, informed consent the handling of health data), whether or not the system falls within the scope of a medical device, as well as general consumer protection legislation. Those items of legislation identified to be of particular initial interest include:

- The Data Protection Directive (as currently revised GDPR) which places requirements for privacy by design and that of informed consent.
- The Medical Devices Directive. The PRECIOUS system consists of appliances (which in themselves may / may not be medical devices) and associated software. Although it is not intended to diagnose disease or provide clinical services, it is however intended to monitor users with the aim of alleviating / preventing those behaviours which could contribute to the development of diabetes or cardiovascular disease. Terms

such as prevention, monitoring and alleviation of disease come within the scope of a medical device. The system will also undertake calculations.

- Safety requirements
- Product utility and validation
- Consumer Rights
- eCommerce Directive 2000/31/EC
- Unfair Commercial Practices

The full review can be read at; <http://www.thepreciousproject.eu/wp-content/uploads/2016/03/D2-5-Report-on-legislative-investigations-Final-29.02.16.pdf>

WP3- Virtual Individual Model Building Motivation

The work conducted with motivational and behavioural research is taking a concrete form as the PRECIOUS app is being finalised. Several elements from Motivational interviewing have taken a digital form, and the self-regulatory tracking features are being piloted by the whole design team.

University of Helsinki is preparing another round of usability tests as the PRECIOUS app approaches its final form. During next weeks test users will walk through the app features and think aloud what they see and how they perceive the usability of each sub-app. In conjunction, with the testing, app features are added and refined so that during the field trials, they will have the best possible tool to hand.

WP4- Systems, Sensors and Feedback Tools

In the preceding months since the last issue of this newsletter (precisely six

months ago), there has been some key developments in terms of the PRECIOUS mobile app. The app is at a critical part of the project implementation, with the primary interface being finalised. The primary interface is the point where the user is able to get updates on sensor data produced by the monitoring of their activities (sleeping, running etc.), physiological parameters and behavioural actions; it is also the point where interaction with PRECIOUS (e.g. through motivational interviewing) occurs; and finally where the notifications or feedback from remote servers etc. can be delivered,

It is therefore, clear that the design of PRECIOUS app is critical element in delivering the value of the health and behavioural intervention service of PRECIOUS for the end user. However, a smartphone is generally a platform that includes many other apps and features vying for user engagement. A recent survey (from comparethemarket.com) has shown that users check their smartphone's' on average of 50 times a day, which is roughly once every 19 minutes of each waking hour. Moreover, over 80% of time spent on the smartphone is on apps. To that end, PRECIOUS app design demands not only fulfilment of functional requirements but also have capability to engage the user (in competition with other apps on the smartphone) and hence be an effective behavioural intervention technology.

The app development process involved almost weekly scrums (small meet-ups) involving developers, user experience (UX)/ user interface (UI) designer and most importantly behavioural scientists who ensured that their scientific methods are not lost in translation during the digitalisation process. An example screenshot of the newly released app is

shown here. Moreover, the app development involved not only the frontend (that is, the UI visible to the user) but also the background but even more important backend part to enable managing the app usage, rules creation, remote configuration, interfacing to analytics servers, storing of some of the user data, and so on. After the several iterations of design and testing it is now time to take the app the trials.



WP5- System Validation

Experiments in Progress!

The heart rate device acceptability study described in the previous newsletter is still in progress. To date, the chest belt is perceived as the easiest device to use and is considered as reliable as electrodes. Taken together and in line with the Technology Acceptance Model, these results suggest that the chest belt is the most acceptable heart rate sensor device. Even if this is consistent with participant's spontaneous verbalizations, this preliminary finding must be interpreted with caution, because only a third of the expected participants have currently completed the experiment. Taking this into consideration, it is interesting to note that 6 participants claimed that they would prefer to use the chest belt in the future.

The environmental study is also continuing, however it is too early to make any conclusions.

**Vall d'Hebron Research Institute (VHIR)
-The pilot test at VHIR is about to start!**

Next May the University Hospital Vall d'Hebron (Barcelona, Spain) will start the pilot test with adult obese pre-diabetic patients. This pilot test is part of work package (WP) number 5 of the PRECIOUS project. The objective of this WP is to include the integration of all the system elements as well as the pilot testing with various kinds of end users. In the VHIR case, 30 patients will help the Consortium to initially test the system and their feedback and outcomes will be very useful to refine and to adjust PRECIOUS system concept and architecture.

In this pilot, the main goals are to explore patients' acceptance of PRECIOUS system in an early stage of its development. The patients will use the PRECIOUS app on their smartphones (Android version). Specifically, we will assess their overall satisfaction, usability and acceptability of the PRECIOUS system, and we will explore if motivational interviewing (MI) in combination with gamification principles is a feasible solution to foster adherence to PRECIOUS. Moreover, the final ambition of the Consortium is to trigger behaviour change and build up motivation to maintain sustained change towards healthy lifestyles.

To do this, thirty patients will be randomized to three different groups: 1) Control group, 2) Intervention group I and 3) Intervention group II. The control group will receive the treatment as usual consisting in regular follow-ups at the hospital with their practitioner and standard routine tests. The intervention group I will receive PRECIOUS system with a short onsite training session on how to use it. Finally, the intervention group II will receive the PRECIOUS system + plus scheduled motivational interviewing counselling on how to use the system. All

participants will be assessed pre and post with different questionnaires comprising lifestyle variables and several psychological parameters.

Campden BRI -Pilot test to start in June!

The aim of this trial will be to investigate whether the motivational aspects of the PRECIOUS food intake tool have an impact on user usage and perceived motivation. The studies will also assess the usability of the PRECIOUS food intake tool.

This study will assess two different elements of the overall food intake application (a food diary element and a challenge element), with each aspect being assessed by sixty participants.

Once recruited and given consent, the participants will be divided into four groups.

For all four groups participants will be firstly asked to complete an online attitudinal questionnaire on day 0. On completion of this questionnaire they will then be asked to download and use either the diary aspect (group 1 &2) or fruit and vegetable challenge aspect (group 3&4) of the PRECIOUS food intake app for 14 days. After 7 days, the participants will be prompted to complete another online questionnaire. After completion of this questionnaire, they will be asked to continue using the app for a further 7 days. After 14 days, the participants will be prompted to complete a final online questionnaire.

For groups 1&3, on completion of the questionnaire after 7 days, motivational elements of the PRECIOUS food intake app will be switched on remotely. The participants will not be made aware of this.

Data will also be collected remotely from the PRECIOUS server regarding the participant's use of the tool during the 14 day user trial.

In the next newsletter preliminary results of this pilot will be available! Do not miss it!

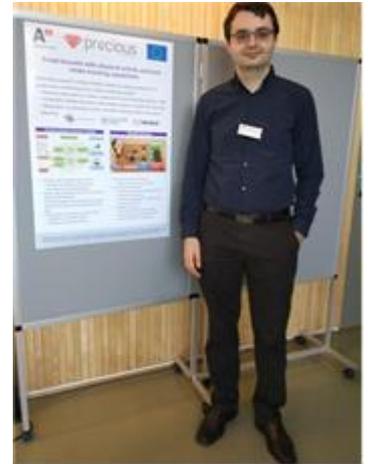
WP6- Dissemination and Exploitation

PRECIOUS has successfully continued its dissemination and exploitation activities both in the scientific and industrial sphere. We managed to hold one major workshop in Vienna resulting in potential partners for future businesses, again published an increasing number of full papers, received a poster award and held a keynote at the 2nd Behaviour Change Conference in London on the topic of Digital Health and Wellbeing.

News from the partners

AALTO University

A poster presentation on the PRECIOUS project was presented on 2nd of March 2016 at the Winter Research Day of Aalto University Schools of Electrical Engineering, Espoo, Finland. The event presented research themes related to ICT and other research themes related to Aalto University's strategic research areas. A total of 25 posters were presented from different Aalto ELEC research teams and the PRECIOUS poster presentation was voted by the participants as one of the two winning posters! The award winning PRECIOUS poster was prepared and presented by Todor Ginchev of Aalto.



In other news from AALTO, two new designers joined the AALTO PRECIOUS team on a part-time basis. Tea Latvala is a User Experience (UX) designer and also majors in Human-centered information systems at Aalto University. Atte Karhunen is a User Interface (UI) designer with experience in creating designs for apps and the creative industries (films, books etc.).

University of Helsinki

The PRECIOUS project and specifically the motivational and self-regulatory features of the app were presented on the 24th - 25th February 2016 in London, England, in the University College's Centre for Behaviour Change 2nd Behaviour Change Conference: Digital Health and Wellbeing. The conference included a broad spectrum of health related digital

interventions, most of which presented results from usability and feasibility testing - the best possible inspiration for PRECIOUS development. The PRECIOUS project poster, presented by Johanna Nurmi, got a lot of positive attention and a long list of attendees asked for further information about the project.



The University of Helsinki will be next bringing PRECIOUS to the stage at the European Health Psychology Conference in Aberdeen, Scotland, August 2016. Keegan Knittle will act as the discussant and Johanna Nurmi will present the results of the usability test and user interviews conducted during Spring 2016 in a mobile health symposium with experts from University College London and Cambridge University.

In September 2016, the behavioural science behind PRECIOUS will be discussed in an expert meeting as the distinguished professor Martin Hagger will visit Helsinki university and the Finnish Self-determination theory researcher network a part of his FiDiPro professorship. In addition to Helsinki-based researchers, the meeting will be joined by e.g. Professor Taru Lintunen from Jyväskylä University and Dr. Sarah Hardcastle from Curtin University.

An intern from the Netherlands has joined the Helsinki team. She will be part of the project until the end of July. Mirte Reimerink is a student from Wageningen University finalizing a master Health and Society. Her master's thesis focused on social norms, social hierarchy and eating behaviour in a primary school setting. In the PRECIOUS project she will take part in the usability tests. She considers this project, together with all the experiences she will have and everything she will learn, as a stepping stone for a future career in e-health.



Institut Mines-Telecom

Short paper, "A Transparent home Sensors/Actuators layer for Health & Well-being services", accepted for eHealth 360° Conference 2016, track IoTCare.

A 6-pages article has been accepted at Body Sensor Network Conference ([BSN](#)), B. Gourvennec. It will be presented in June by M. Simonnet in San Francisco.

A 2-pages article for a poster has been accepted to the first IEEE Conference on Connected Health: Applications, System and Engineering Technologies ([CHASE](#)) ". M. Simonnet will present it in June in Washington.

A new paper has been accepted (8 pages) for presentation at the conference and for publication in the IEEE ATC 2016 proceedings: "Choosing security elements for the xAAL home automation system", Lohr Christophe and Tanguy, Philippe and Kerdreux Jérôme.

FUNDACIO HOSPITAL UNIVERSITARI VALL D'HEBRON

A new researcher has joined the VHIR group and the PRECIOUS Consortium. Dr. Jordi Moreno holds a PhD in Health and Sport Psychology. His dissertation was focused on the assessment of psychological and behavioural parameters to monitor the recovery and stress process in athletes and lifestyle and well-being in general population. He has research experience in different research projects related to healthy lifestyles in different sample populations. Last year he has been carrying out ecological momentary assessments (EMA), a methodological approach very close to the research protocol of VHIR pilot test of PRECIOUS system. His main tasks will be to support and carry out different tasks related to the pilot test that will take place at VHIR from May to August (WP5). Besides, he will work on different dissemination and scientific reports of the results of the pilot and the activities of the project. If you would like to know more about Jordi's activities, check his Research profile at Researchgate (https://www.researchgate.net/profile/Jordi_Moreno4)



The MWC highlights the relevance of Behavioural Motivation into lifestyle and health apps

Taking advantage of one of the biggest events in new technologies, PRECIOUS had the opportunity to be introduced at the Mobile World Congress week last February 2016 in Barcelona.

In this context a mHealth seminar was programmed in order to highlight the importance of motivating behavioural change through mobile technologies.

The seminar provided an overview of theoretical aspects of motivation and methods to be used in lifestyle and health mobile applications. As well as that, evidence from experts in how to put theory into practice was presented.

See further information about the presentation at
<http://www.mobilehealthglobal.com/eventos/25-febrero-2016/>

Recent and upcoming events

On the 23rd of September the PRECIOUS consortium will be holding a seminar for key stakeholders. The event will include live demonstrations of the new PRECIOUS tool and discussions around our key learning's. The seminar will be held in the UK (exact location to be confirmed), but if you are interested in attending, please let charlotte.holmes@campdenbri.co.uk know and further details will be provided to you in due course.

Consortium partners

Co-ordinated by AALTO University, the PRECIOUS consortium includes 8 beneficiaries from academia, research centres and industry. Combined research expertise covers information communication technologies, physiology, nutrition, motivational techniques and cognitive analysis.



Aalto University



Campden BRI



European Food Information Resource



Firstbeat



Hospital Universitari Vall d'Hebron,



Telecom Bretagne



Institut de Recerca VHIR



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University of Vienna

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