



newsletter

What Lies ahead for the PRECIOUS team in Year 2?

As the PRECIOUS project gradually approaches its midway point (of a three year period) it is probably the right time to look ahead to the remainder of the Year 2 and the interesting developments envisioned for that period. Year 1 of the PRECIOUS project was about building a solid understanding of user needs and the overall usage context. In Year 2 the focus is on leveraging that knowledge to build PRECIOUS behavioural intervention tools and services that meet and preferably exceed user expectations in their quest for maintaining healthy habits and motivating lifestyle changes. This third issue of the PRECIOUS newsletter provides interesting early insights on what has been achieved so far and a further glimpse of what lies ahead.

In this issue

- In the spotlight: System Architecture: The Big Picture
- Progress and achievements
- News from the partners
- Recent and upcoming events
- Consortium partners
- Contact us



In the spotlight: WP4 - System, Sensors and Feedback Tools

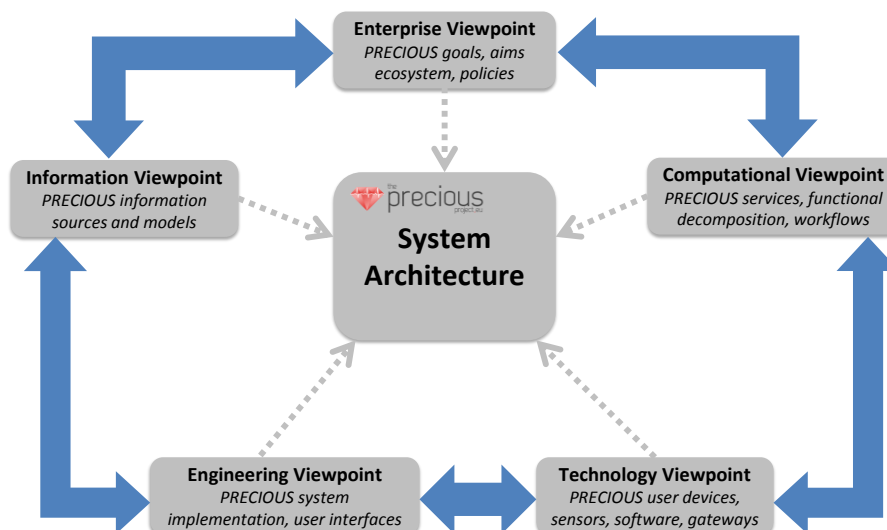
PRECIOUS System Architecture: The Big Picture

It is generally acknowledged that every system has an architecture, whether created deliberately through a formal design process or gradually as a result of other less managed processes over a period of time. The system architecture specification (viewed as art form) is a process of painting a 'big picture' that allows us to view many properties of a system, such as, the functional behaviour, emergent behaviours, complexity, flexibility, and so on. As such, the system architecture finds relevance in many processes, including design, operation and management of the system.

Against this backdrop, the PRECIOUS system architecture has recently been specified within PRECIOUS to provide a framework for the many design and implementation activities carried out in the second year of the project. To that end, the PRECIOUS system architecture specification is based on an architectural framework known as the Reference Model Open Distribution Processing (RM-ODP) which found use in many research projects and health enterprise IT design processes. The beauty of RM-ODP is that it allows us to paint this 'big picture' with different perspectives or viewpoints that provide viewing angles for mixed set of system users (e.g. software developers, health practitioners, network engineers, etc.). Such diversity of expertise is event evident within the multidisciplinary PRECIOUS consortium.

The definition of each PRECIOUS architectural viewpoint is further complemented by the so called Behavioural Intervention Technologies (BIT) model, which provides conceptual and technological definitions from clinical aim to technological delivery for behavioural change interventions.

The big picture describing the five viewpoints of the PRECIOUS system architecture that will guide us further in the project's ongoing work is illustrated below.



Progress and achievement

WP2- Requirements Identification and Socio-Economics

What's the right direction?

We will shortly be publishing an Interim report on socio-economic factors that may affect the PRECIOUS system and various potential business models. The aim of this report was to learn from the games industry in terms of business models and the multiple ways they use new business logic to engage players. As part of this report we have then investigated whether any of these approaches are applicable to the PRECIOUS system. The report has also allowed us to evaluate the role of underlying stakeholder relationships, and especially, evaluate already existing care taking practices. This report will then allow us to further evaluate sustainable business models for the PRECIOUS system. The chosen system will need to be economically attractive, sustainable, acceptable to the user and support motivational techniques used by PRECIOUS. We expect this report to be published in May, so please keep your eyes peeled as it will found on our publications page of the PRECIOUS website;

http://www.thepreciousproject.eu/?page_id=15

WP3- Virtual Individual Model Building Motivation

During the last couple of months, the PRECIOUS framework has taken important steps towards its final form. We have identified the most challenging issues both users and app-developers are facing today: the incredible number of health-related applications available in app stores, rendering it impossible for users to

find the right app for their goals and thus resulting in decreased motivation, and low level of engagement. Additionally, certain problems, such as changing towards healthier behaviour, require a multitude of different applications, where developers often work on island solutions rather than contributing together for the benefit of the user. For this reason, we have decided to improve this process from the ground-up and have come up with a single app idea, which runs and manages different types of health apps. Users will no longer need to go through the enduring process of finding the right app, a recommendation system within PRECIOUS will make sure that the right app is suggested for the right person in the right context. For instance, you probably wouldn't want to go on a run if it's raining outside, or if you are currently in a meeting at work. The recommendation system also takes into account motivational aspects of the user as delivered by our Virtual Individual Model, i.e. behaviour change techniques that have worked well in the past, in order to maximise the impact of the respective app. This system also has benefits in terms of privacy, as all health-data is accessible to externals only within the PRECIOUS app itself, hence no data will ever leave PRECIOUS and we hope to be able to achieve trust of our users. A global gamification system, shared by all applications, will complete the picture of a motivational framework, where users can easily bring, share and use their achievements to others apps. Overall, this also enhances the creation of the intended ecosystem, and we hope to achieve a win-win situation for all stakeholders involved.

WP4- Systems, Sensors and Feedback Tools

Have you seen the PRECIOUS Food and physical activity application so far, if not take a look?

Wednesday, 22 04 20..  Kopernikuksentie 1, null



https://play.google.com/store/apps/details?id=aalto.com.net.thepreciousproject&hl=en_GB

(Currently only available in android form)

It would be great to hear your feedback!

Why do they keep coming back?

As part of the development of the PRECIOUS system, it has been identified as a critical factor of an individual continuing to use such a system is that it should be user friendly. Following investigations around current food intake applications (including use of Google Play and Apple download data), we have identified that the most popular application is MyFitnessPal™. To aid the development of the PRECIOUS food

intake app, Campden BRI are carrying out a user study to investigate the usability of currently available popular applications, to aid the PRECIOUS team's understanding as what make a user repeatedly use current applications. The study will consist of 3 groups of individuals each downloading and using 3 different applications, for a period of time and then completing an online survey. The study will be done remotely via online surveys and is planned to go ahead late June. Keep an eye on our social media websites for regular updates and the opportunity to participate!

WP5- System Validation

Since the validation of the PRECIOUS system is a critical point of the project, experimental plans to perform it in the best conditions are in progress. Telecom Bretagne have already designed an experimental protocol and questionnaire to compare the respective acceptability/usability of the potential heart rate sensors of the PRECIOUS system. PULSEON, SUUNTO ambit3 and FIRSTBEAT Bodyguard2 will be tested by super users of different categories previously determined:



Students, single worker, family unit and retired couple.. After having used these sensors and app for 3 days, super users will complete a questionnaire. At the end

of the project, the results of this study should reveal which sensor is the most appropriate for people using the PRECIOUS system.

Please keep checking our website and social media to keep up to date with our progress. New information will be available soon...

WP6- Dissemination and Exploitation

The PRECIOUS dissemination activities have gathered momentum in the last 6 months. The project counts now more than 14 submissions for scientific venues, 6 further publication submissions, and 11 scientific presentations. The preparation of the first project **white paper** has been initiated and will be **ready for you this year**.

You can also follow us on our newly set up blog

(http://www.thepreciousproject.eu/?page_id=278), our new official Twitter account

(@EUPrecious), the Twitter discussion thread (@EU_PRECIOUS) or our

Facebook page

(<https://www.facebook.com/thepreciousprojecteu>)

Want to contribute to xAAL?

xAAL is a new solution to fight home automation interoperability issues. All the xAAL development are now open to the community. The xAAL library is provided according the terms of the GNU Lesser General Public License v3.0. The demo applications are provided according to the terms of the GNU General Public License v3.0. For more details about source code or contribution see the xAAL project webpage <http://recherche.telecom-bretagne.eu/xaal/> and/or the Github

repository for the PRECIOUS project at <https://github.com/preciousproject/xAA>

Cooperation between EU projects

On Wednesday the 8th of April, Charlotte Holmes from Campden BRI visited the Institute of Food research in Norwich to meet with some members of another EU project called QuaLiFY. QuaLiFY is a 2.5 Mio EU-funded project using results from previous EU-funded projects on food composition and intake, and the relationships between who we are (genotype, phenotype) and what we eat (nutritional status). They will be linked via the [QuaLiFY server platform](#) (QSP), developed within the project, which will provide easy access to scientifically-sound data and knowledge rules relevant for developing personalised nutritional advice products and services.



The meeting was to discuss the cooperation between PRECIOUS and QuaLiFY. In particular we are planning some potential joint dissemination activities, so watch this space to hear more....

Have a look at their website

<http://www.qualify-fp7.eu/> to find out more and follow them on [LinkedIn](#).

News from the partners

AALTO University



Dr. Edward Mutafungwa gave a presentation on the objectives and insights from the PRECIOUS project at the EUROFIR AISBL Food Forum Symposium held on 26th March 2015 in Brussels, Belgium. The theme of the symposium was "Towards a food and health Research Infrastructure in Europe".



University of Helsinki

Dr. Ari Haukkala presented the poster "Testing a sensor based application for physical activity and food intake with an N of 1 study; Connecting devices to theories" at the University College of London, Centre for Behaviour Change Conference 2015 Harnessing Digital Technology for Health Behaviour Change.



Johanna Nurmi delivered a presentation to the Helsinki Human-Computer Interaction network with the title: How to support motivation for healthy lifestyles with a smart phone? Techniques from Motivational Interviewing.

We are also pleased to announce the PRECIOUS Lab study conducted at the University of Helsinki, by Alessio Falco, is about to finish. We have had 46 participants take part (University students) with a target of 50. Using the concept of gamification, psychological theories and insights, the aim of the study was to examine whether a serious games can be used to enhance an individual's nutrition knowledge, and to increase the motivation toward healthier diets.

In the Lab study, each participant is presented with 8 mini serious games. Each game is made of two dependent tasks, named as Task 1 (4 food selection subtasks), and Task 2 (sports game). In the beginning, the player is asked to customize his/her own avatar on several dimensions. The objective of the player in the Task 1 is to rank in order attitude-related images to a given criteria, whereas the objective of the player in the Task 2 is to win against an opponent in a sports-like competition. The individual learning is assessed at the

end of each game using a recognition multiple choice memory test, based on the feedback given after each food selection subtask.

To study the effectiveness of the game and to measure the participant's cognitive, emotional and motivational processing during the game play we have used a mixed-methods combining traditional self-reported methods with physiological measurements such as EEG (electroencephalography), EMG (electromyography), EDA (skin conductance) and ECG (electro-cardiac activity)

The study was carried out in collaboration with the University of Vienna; in particular, Christopher Helf, has done a fantastic job in coding and implementing the serious game.

According to the participants, the game is funny to play with, and the use of the avatar increases the player's engagement. Participants have shown a lot of interest and curiosity for the Lab study and the PRECIOUS Project. When debriefed, several participants asked about the hypotheses and goals of the study, while several others provided important and valuable feedback. A common criticism regarded the length of the Lab study, which occasionally caused tiredness. Nevertheless, the majority of the participants showed an eagerness to know more about their performance in the multiple choice memory tests, especially compared to other players.

The next step is to process and analyze the data. Self-reported answers have to be combined with physiological data. We expect to complete the data processing by the end of May, and to have preliminary results ready before the holiday season.

University of Vienna

Peter Reichl (University of Vienna) will present the paper "From Service Level Agreements (SLA) to Experience Level Agreements (ELA): The Challenges of Selling QoE to the User addressing" (authors: Martín Varela, Patrick Zwickl, Peter Reichl, Min Xie, Henning Schulzrinne) at ICC 2015 in London, UK, and the paper "On the Approximation of ISP and User Utilities from Quality of Experience" (co-authors: Patrick Zwickl, Peter Reichl, Lea Skorin-Kapov, Ognien Dobrijevic, Andreas Sackl) at QoMEX 2015 in Costa Navarino, Greece. Both papers have emerged from related PRECIOUS work.



Patrick Zwickl (University of Vienna) will visit Aalto University Helsinki for a research stay in May 2015. Main topics of the planned joint work with PRECIOUS partners include a mobile apps workshop with partners, collaboration on laboratory trial concepts, and the planning of the upcoming socio-economic deliverable D2.3.

Up-coming Events

IEEE Healthcom15, 14-17 October 2015, Boston, USA

5th International Conference on Wireless Mobile Communication and Healthcare (MobiHealth), October 14–16, 2015 London, Great Britain



Jose Costa will be speaking at the upcoming eHealth Week 2015 in Riga conference for the session Social Networking and Gaming: Opportunities for Patient Engagement

<http://www.worldofhealthit.org/ehome/index.php?eventid=98290&>

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



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Institut de Recerca VHIR



Telecom Bretagne



University of Helsinki



University of Vienna

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