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# newsletter

## Year 1 achievements set PRECIOUS team on the road to success

PRECIOUS has reached its first year of existence with a team of motivated and passionate experts with the dream to deliver a set of applications and services that will have real impact on peoples' health, wellness and quality of life. Not only have we accomplished the project deliverables set for the year, but importantly we have also built team spirit and created focused goals for 2015. Going forward, we work on a challenging but thrilling ambition for leaner and more effective health related services.

The PRECIOUS consortium is well positioned for this task due to the competitive advantage of multidisciplinary experts ready to jump out their comfort-zone and work to design and deploy innovative solutions that motivate users to change or avoid unhealthy habits. We still have lot of work ahead of us in the remaining two years but the determination to tackle this exciting challenge within the PRECIOUS team will guarantee that we excel in our targets.

## In this issue

- In the spotlight: Encouraging behavioural change
- Progress and achievements
- News from the partners
- Recent and upcoming events
- Consortium partners
- Contact us

## In the spotlight: Encouraging behavioural change

### Motivational service design

The PRECIOUS team has made great progress in shaping the motivational service design, which is critical to the success of the project. The latest [report](#) presents a current snapshot of motivational, functional and design aspects, which will be implemented throughout the project. A holistic framework, which will build up and sustain sufficient levels of motivation for a healthier lifestyle, has been developed. We have created a number of principles, derived from the Self-Determination Theory, Flow-Theory, Transtheoretical Model and Motivational Interviewing, and have also reviewed the motivational mechanisms of games and gamification applications.

### A personalised approach

Monitoring of daily habits and activities is essential for recognising unhealthy behaviours, and fostering healthy ones. Therefore, to achieve its goals of improving wellbeing, and contributing to the prevention of type 2 diabetes and cardiovascular diseases, PRECIOUS will build a **Virtual Individual Model (VIM)** of its users.

The VIM is based on collecting information via ubiquitous sensors and applications regarding different lifestyle related factors and personal attributes. These include:

- physical activity, stress, sleep, diet, alcohol intake, smoking, location, environmental factors, psychological distress, wellbeing, social networks, motivation for behavioural changes and current goals and plans

The VIM is a regularly updated comprehensive view of the user's risk factors for type 2 diabetes and cardiovascular diseases, and it can be used to tailor preventive lifestyle interventions for PRECIOUS users.

### Tailoring & individualisation

Starting from the VIM, an individualised intervention strategy will be designed. This will include a sophisticated goal-guidance system and a thorough analysis of the user's current context (e.g. location, weather or time pressures), which will be continuously adjusted in a cyclic learning process. Relevant apps will be matched with the intervention request and called on the users' devices, such as their smart phones, and displayed within an app stream. Another motivational tool is 'Recipes', whereby users can fully and transparently control how and why interventions are suggested, and alter these connections as required. On one hand, this facilitates the process for developers of specific intervention tools and ideas; however, users also have full control over their environment. For instance, an office-worker used to long working hours could simply create a Recipe advising them to drink a glass of water after a set time period. This concept is outlined in *Figure 1*.

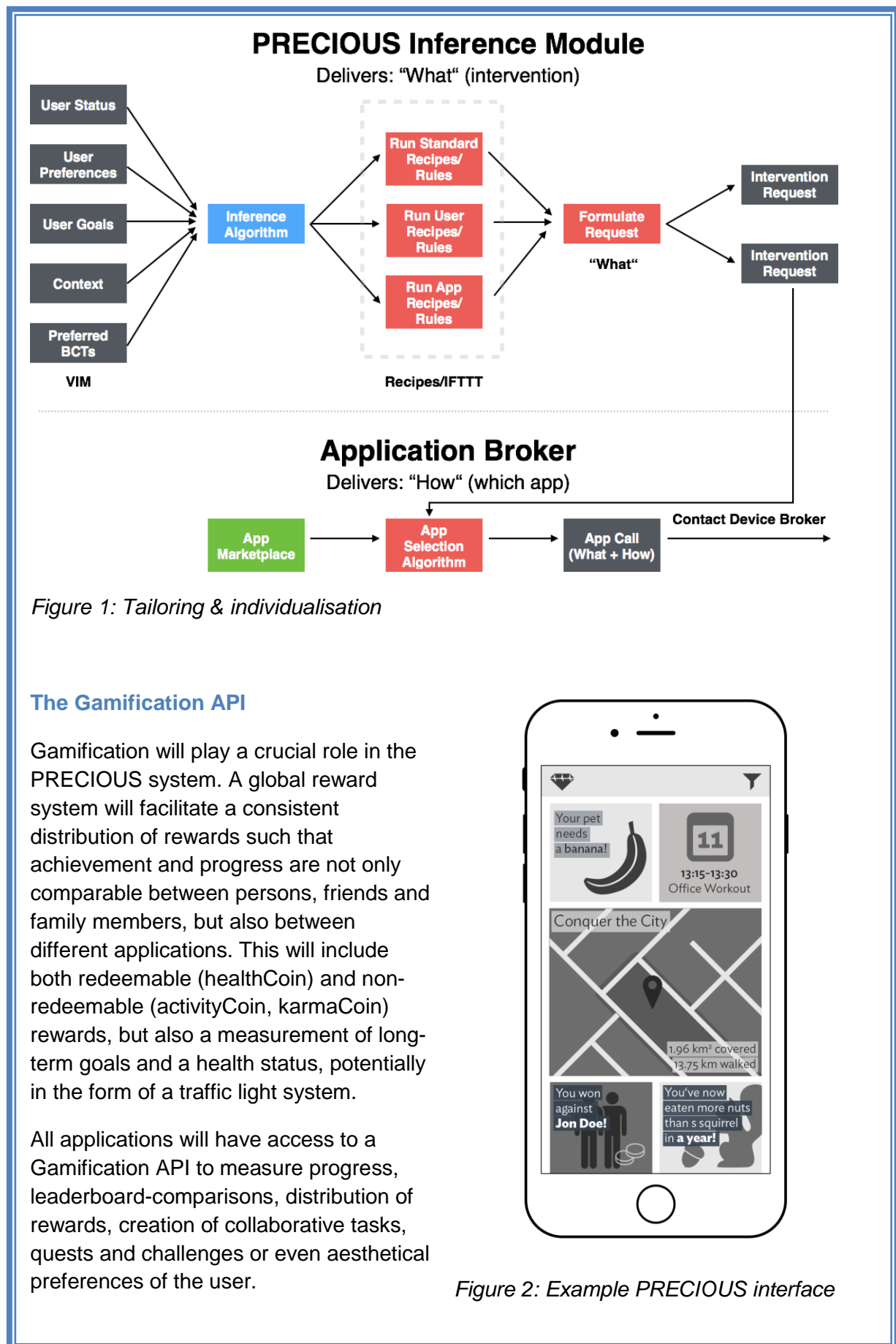


Figure 1: Tailoring & individualisation

### The Gamification API

Gamification will play a crucial role in the PRECIOUS system. A global reward system will facilitate a consistent distribution of rewards such that achievement and progress are not only comparable between persons, friends and family members, but also between different applications. This will include both redeemable (healthCoin) and non-redeemable (activityCoin, karmaCoin) rewards, but also a measurement of long-term goals and a health status, potentially in the form of a traffic light system.

All applications will have access to a Gamification API to measure progress, leaderboard-comparisons, distribution of rewards, creation of collaborative tasks, quests and challenges or even aesthetical preferences of the user.

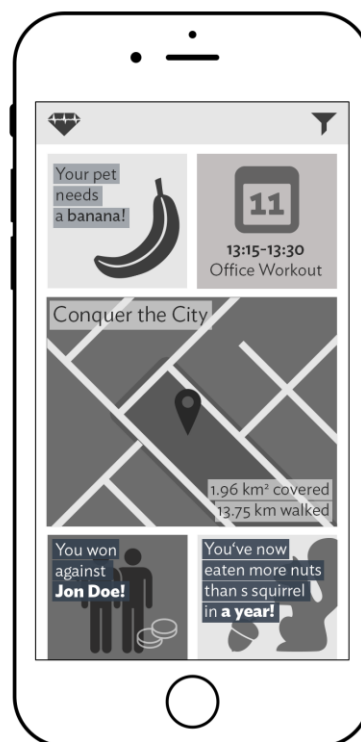


Figure 2: Example PRECIOUS interface

## A Unified System Design

More and more electronic health (eHealth) applications are emerging in mobile app stores and enjoy increasing popularity. However, each application usually stores, collects and processes information separately. A healthy lifestyle is characterised not only by improvements in a single dimension, but by a strategy incorporating multiple aspects e.g. physical activity, food-intake, stress levels and sleep quality. PRECIOUS will provide a systematic and unified motivational framework and platform that allows users to interact with individual applications that operate under a single, open umbrella. This will be realised by hosting and executing these applications in a sandboxed-environment ensuring maximum safety and security of the user's data.

## Progress and achievements

### Setting the scene for future developments

In the [May](#) newsletter we reported on research carried out to understand the user requirements of a preventive healthcare service. A [list of usage scenarios and user requirements](#) has now been published and the 16 key requirements have been prioritised (MUST HAVE, COULD HAVE, SHOULD HAVE and WON'T HAVE).

Initial system development will focus on the 'MUST HAVE' requirements:

- Measurement of risk factors/lifestyle aspects
- Options to control data sharing and privacy settings
- Receive feedback on risk factors/lifestyle aspects
- Delivery of reminders to user
- Educates user towards healthier behaviours
- Motivates the user to make behavioural changes
- Setting of personal goals

### An ethical approach

Rapidly developing technology and the advent of social media offers exciting opportunities for more accurate

understanding of human function and behaviour, and the possibility to use this knowledge to increase user well-being. However, this also presents a number of ethical and privacy challenges. These [issues](#) have been carefully considered and solutions presented to minimise risks. Furthermore, ethics and privacy will be addressed throughout the project in the form of annual reports. The Year 1 report can be viewed [here](#).

### Assessing food intake tools

Within the project, the consortium will have to evaluate the effectiveness and usability of the developed food intake application; comparing it with market-leading applications. The consortium has been in contact with the University of São Paulo (Brazil) given that this institution produced a similar study. The "Nutra well" (<http://www.nutrabem.com.br>) project (2009) was the first Brazilian application of food intake assessment. Thus, with this partnership, we hope to create an effective assessment tool that will evaluate the success of the food intake application that will be developed within the project over the coming months.

## Taking expert advice

The creation of an Advisory Board (AB) is a key strategy for the engagement of influential stakeholders within the project and we are delighted to announce the appointment of four individuals to the PRECIOUS AB:



Dr Joan Colom,  
Director of the  
Program on  
Substance Abuse,  
Research Co-  
ordinator of the  
Public Health Agency  
of Catalonia



Sabri Abarkan,  
Vivsan Salud S.L.



Ólafur Andri  
Ragnarsson, Chief  
Software Architect at  
Betware, Reykjavik  
University



Barbara Koroušić  
Seljak, Jožef Stefan  
Institute

The AB will be consulted via email and Skype throughout the project to ensure that activities and outputs remain relevant. AB members will also be invited to attend face-to-face meetings as well as project workshops and seminars.

## Getting creative

At the recent plenary meeting (24-25<sup>th</sup> September, University of Vienna, Vienna) we discussed details of the VIM, architectural structure, implementation of front- and back-end services and motivational aspects of the system design. During the meeting the team were tasked with creating client-app ideas that would increase motivation, and the eventual winners were rewarded with some (not-so-healthy) prizes!



*Figure 3: Client-app competition winners*

The winning idea was **'Health-a-Gotchi'**, based on the game Tamagotchi, in which the users' avatar is kept alive, and physically and mentally healthy, when the user also looks after their own health. This visual representation of behaviour is designed to encourage the user to make healthier choices. Implementation of 'Health-a-Gotchi' will be explored in the coming months.

## Business modelling

To attain the desired impact, it is important to create an environment where developers can use their creativity to conduct business, motivate users and technically innovate. Therefore, instead of enforcing sharp business rules, PRECIOUS targets an open platform, linked together by healthCOIN.

Despite its name, healthCOIN is much more than just another virtual currency (such as bitcoin). It is a collection of metrics specifically designed for the eHealth case as an interface between any kind of healthy activity and PRECIOUS, which is compatible to with creative means of intrinsically and extrinsically motivating users (*Figure 4*).

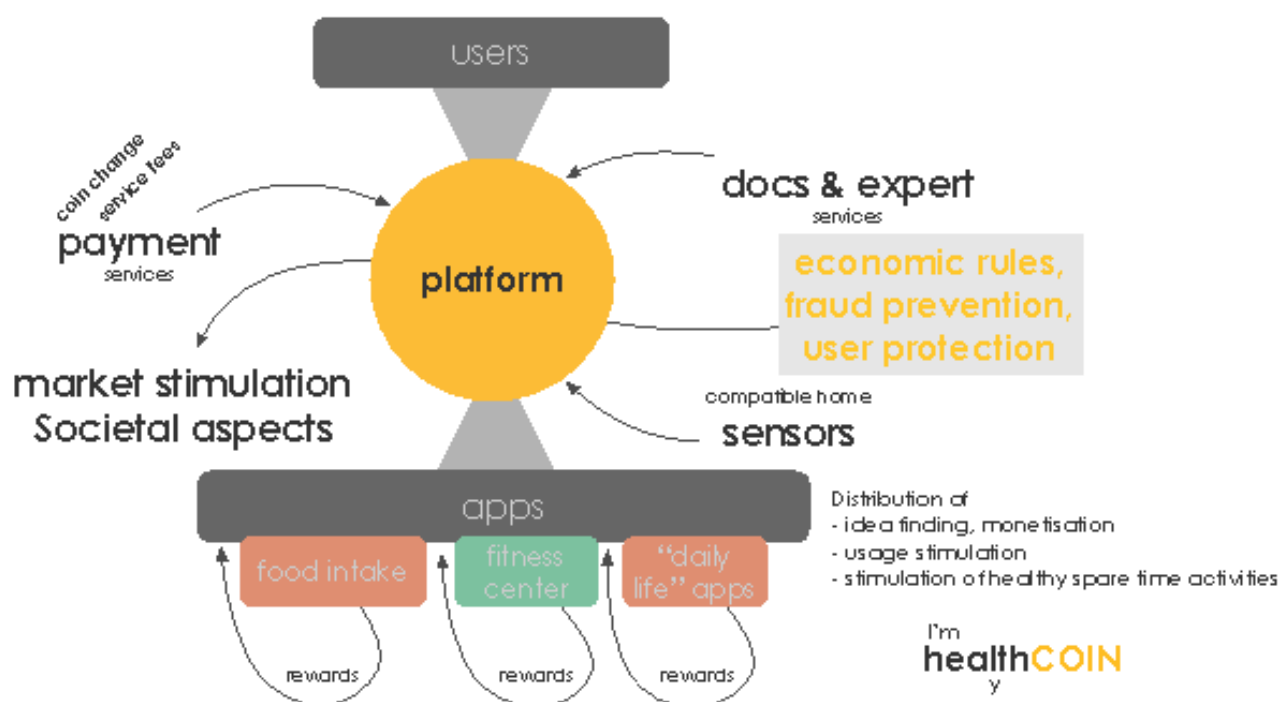


Figure 4: PRECIOUS healthCOIN concept

Unfortunately, occasional healthy behaviours cannot compensate for a generally unhealthy lifestyle. Thus, PRECIOUS needs to motivate users to continuously work on all aspects of their health (e.g. food intake, exercise and sleep). This idea is built directly into healthCOIN, which transfers health activities into achievement levels (*Figure 5*) that have to be retained over time via continuous activities. For example, 'Katy' may have obtained the silver level for physical activity, while she is struggling to progress in the food intake category. While she might increase her focus on improving dietary habits, she cannot discontinue her physical activity efforts. The healthCOIN concept continues to be developed and will be further described in '[Deliverable 2.2: Interim report on socio-economic factors and business models](#)' (due for publication in May 2015).

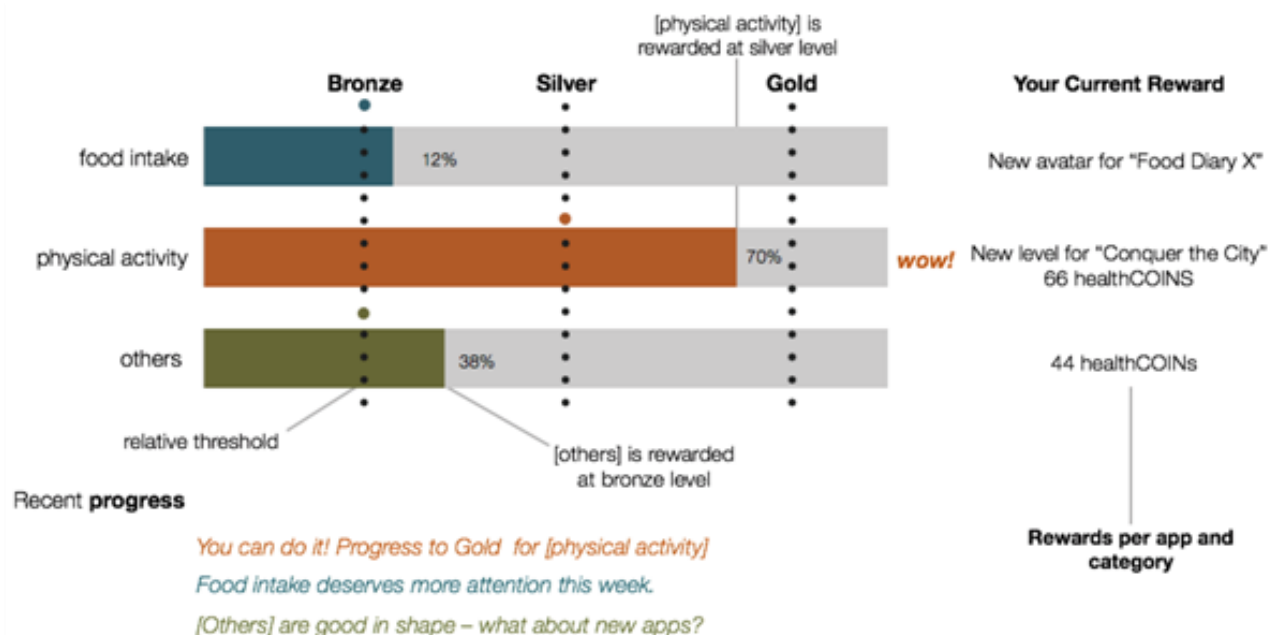


Figure 5: healthCOIN achievement level

## News from the partners

**Johanna Nurmi (University of Helsinki)** recently participated in the European Health Psychology Society (EHPS) pre-conference workshop **“Leveraging Mobile Technology and Social Media in Behavioral Research”** facilitated by Dr. Sherry Pagoto (University of Massachusetts Medical School, Massachusetts, USA) and Dr. Kristin Schneider (Rosalind Franklin University, Illinois, USA).

The workshop provided valuable perspectives on the study of information technology for health and wellbeing. For instance, discussions were held on the role of social media in transmitting health information to customers and recruiting research participants.

Furthermore, it was concluded that mobile health (mHealth) app industry rarely makes use of existing health psychological evidence: validated constructs and tested theories are missing. Many apps are designed to target motivation, self-regulation, education and social support, but rarely employ techniques that are backed-up by research. In particular, apps do not bridge the gap between intention and behaviour and real-life contexts are rarely taken into account.

Challenges in the study of mHealth were also presented and it was recognised that the slow speed of behaviour change and the constantly updated marketplace makes it difficult to test apps. However, mHealth still offers unforeseen possibilities for health care and related research. A report of the pre-conference workshop, co-authored by Johanna Nurmi, will appear in the European Health Psychologist in December 2014.

EuroFIR AISBL is pleased to announce the PLEASURE Final Conference:

**Pleasure Final Conference, Friday, 5th December 2014, Le Châtelain Hotel, Brussels, Belgium**

PLEASURE is the first European research project addressing the challenges involved with producing food low in fat (saturated and trans-fatty acids), salt and sugar from the processing side. The idea was to identify and further develop (novel) processes and processing technologies, which on the one hand allow the reduction of unwanted fat (saturated and trans-fatty acids), salt and sugar (mono- and disaccharides), but on the other avoid, or at least reduce, the use of replacers like sweeteners by achieving an optimised sensorial perception of the sugars, salts and fats present in the products.

For more information please click [here](#).

## Recent events

II Fórum Getem, 24-25<sup>th</sup> October 2014, Santiago de Compostela, Galicia, Spain



Carmina Castellano Tejedor delivered an oral presentation on “*Motivational interviewing meta-analysis in health and primary care settings*” at II Fórum Getem (<http://www.getem.org/forum2.html>). A copy of the presentation (in Spanish) is available on the PRECIOUS [website](#).

European Health Psychology Society workshop (EHPS), 24-26<sup>th</sup> August, Innsbruck, Austria



Johanna Nurmi delivered an oral presentation on “*Physical activity: the role of autonomous motivation and self-regulation techniques*” at the EHPS conference entitled “Beyond prevention and intervention: increasing well-being”.

## Upcoming events

CBC Conference 2015: Harnessing Digital Technology for Health Behaviour Change, 23-24<sup>th</sup> February 2015, London, UK - <http://www.ucl.ac.uk/behaviour-change/cbc-events/cbc-conference-2015>

Mobile World Congress, 2-5<sup>th</sup> March 2015, Barcelona, Spain - <http://www.mobileworldcongress.com/>



## 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,  
Institut de Recerca VHIR



Telecom Bretagne



University of Helsinki



University of Vienna



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