WellCo – Wellbeing coach for behaviour change

Inmaculada Luengo – Project Coordinator
Head of R&D department at HI-Iberia

“This project has received funding from the European Union’s Horizon 2020 research and innovation programme under the grant agreement No 769765.”
WellCo introduction

▶ H2020 Project

▶ Funded under the call of Personalised medicine: SC1-PM-15-2017
  - Personalised Coaching for Well-Being and Care of People as they Age

▶ Finalized in 2021
Project Achievements

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Include affective computing

• Affective computing will guide the interaction of the Virtual Coach.

Personalized Virtual Coach

• WellCo Virtual Coach for training in wellbeing

Personalized advice, guidance and follow-up

• Provides personalized recommendations in order to motivate a behavior change towards a healthier lifestyle.

Key age related issues like diet, physical activity, risk avoidance, preventive measures, lifestyle, activity management, leisure, social participation and overall wellness

• WellCo aim is monitoring and providing intervention around the following areas: Nutrition, Physical activity/daily habits, vital signs, social inclusion and mental health.

Facilitate interaction with carers

• Informal carers (OBS-RO) > will empower the behavior change of the users.

• Expert caregivers (EXP-RO) > will provide feedback closing the feedback validation loop.

Project purpose

• Around 150 users involved in trials

• 50% of users engage in long term use (5 months)

• 20% of users engaged in long term trials facing successful behavioral change in at least one aspect of their life.

Informal Caregiver App

Expert Web App

133 users have been involved in WellCo

At least 25% of users improve in at least one aspect of their wellbeing
Objectives and Scope of the project
How to deal with behaviour change?

- Understanding the **context around the people**
- Personalize interventions in such a way that they **fit the capabilities and opportunities** of people
- **Motivate** people towards behaviour:
  - Social Incentives;
  - Immediate Rewards;
  - Progress Monitoring and Continuous Support

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Understanding the context around people

• How we get information about the context surrounding the user?
  
  • SENSORS

  Ticwatch E2  Steel HR  Smartphone

  • LIFE PLAN and SELF-REPORTS
    • Life Plan: Beliefs, life objectives, social life status, daily life activities, hobbies and desires
    • Validated questionnaires about sleep, nutrition, physical activity, risk of CVD, etc.

  • MOBILE CAMERA AND SPEAKER
    • Assessment of the emotional status of the user when interacting with the coach

  Happy

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Understanding the context around people

• How we interpret the data caught by sensors?

User Monitoring

- Nutritional Status
- Mental Status
- Physical Health
- Risk Assessment

User Data

User Assessment

User Status Assessment

- Areas in which the user needs to improve

User Dynamic Modeling

- Detect deviations from normal patterns to check the progress of the user

Module for Affective Computing via Visual and Audio Features

“Happy”, “Sad”, “Angry”, “Neutral”

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Personalize Behaviour Change Interventions

- Data from previous phases is used to personalize and offer recommendations in those areas where it is needed:

[Diagram showing various recommenders: Nutritional Recommender, Wellbeing Recommender, Mental Recommender, Social Recommender, Emotional Recommender, General Recommender.

Sorted by relevance and user preferences.

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Motivate people to follow interventions

- **Social Incentives**
  - Goals
  - Notifications every time a friend has achieved a goal
  - Social Network

- **Immediate Rewards**
  - Positive comments in the Social Network
  - Visualization of the goals achieved

- **Progress Monitoring**
  - Visualizations of historical steps, sleep, heart rate and weight
  - Tips
  - Interactions with the coach -> Through recommendations or conversation

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Validation methodologies
Step 1: Co-design of the mockup

Figure 1.- Picture of the Diary/Logbook

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Step 2: Requirements gathering and analysis

Step 3: Development of first prototype and introducing to participants

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Step 4: Testing, evaluating and reporting for improvements

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Step 5: Improvements included in the 2nd prototype. Testing and reporting

https://www.youtube.com/watch?v=N-sNX0PV5GA&t=7s

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Step 6: Development, testing and evaluating the final prototype

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Pilot Trials

- Validation of the final prototype in Denmark, Italy and Spain

*Spain*
- GSS
- Signed inform consent
- 54 users aged over 65
- From rural areas in Castilla y León (Spain)

*Italy*
- FBK
- Signed inform consent
- 54 people aged over 65
- From urban areas in Trento (Italy)

*Denmark*
- SDU
- Signed inform consent
- 27 people aged over 55-65
- From rural and urban areas in Copenhagen and Southern Denmark

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Conclusions

Awareness of their own lifestyle combined with quantitative analyses indicate that when users use the WellCo app for a longer period a behaviour change is to be expected.

The duration of the WellCo trial only allowed us to detect a trend towards behaviour change.

Progress monitoring and recommendations were really appreciated by users and motivate them.

The possibility of using WellCo mobile as a secondary phone was a request from recruitment side, but it has been a handicap on the final scores obtained.

Pandemic situation has supposed a drawback in the use of WellCo as many activities has been really limited and normal life has changed.

25% of the users in the Spanish trial wants to continue using WellCo after the end of the project even without the support of GSS (and they are currently using it)

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