ChefMySelf is co-funded by the European Commission under the Ambient Assisted Living (AAL) Joint Programme

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What is ChefMySelf?

"ChefMySelf" (www.chefmyself.eu) is a project developed within the Ambient Assisted Living (AAL) Joint Programme funded by the European Commission in order to undertake the challenge of improving the standard of living of the elderly people in Europe.

What is the goal of the project?

The main goal of the ChefMySelf project is to develop a customizable, open and extensible ICT service ecosystem built around an automatic cooking solution to support elderly people preparing meals and maintaining healthy eating habits. A food processor with an accessible interface, specially tailored for the elderly, will encourage them to self-care, according to their particular nutrition requirements. At the same time a social network, focused on the topic of healthy ageing and eating, will become a tool to motivate them to be active and maintaining existing social relationships and creating new ones.

The solution will offer culturally appropriate guidelines for healthy eating as people age by supporting improved diets and healthy weights in older age through the provision of information (including personalized information to the specific nutrition needs) by facilitating the task of cooking every day, as well as offering them the chance to access to several services related with the activity of cooking, guiding them to make healthy food choices and hence contributing to reduce risk factors associated with major diseases and increase factors that protect health throughout the life course.

What's innovative in the ChefMySelf solution?

The Cloud Based Services

The ChefMySelf services will be cloud based and will offer a suite of applications for the care of elderly nutrition and its support through the consultation of a complete reference of recipes. The services will be accessible by the elders through two different interfaces: one TV with a set-top box and a tablet device. Furthermore, a common food processor will be enhanced and coupled with these services to assist elders during meal preparation.

One of the key aspects of the ChefMySelf solution, which differentiates it from other AAL solutions[1], is its openness for third parties, which will allow the simple integration of external devices and services into the system.

ChefMySelf will provide an innovative service model where the innovation should be conceived not in terms of improving technology but in terms of adapting technology and devices to elders' needs.

The system can be customized to the needs of each potential user and be used in the way the user feels more comfortable: just for recipe consultation, assistance on meal preparation or supporting diet habits, social networking and many more useful features. Devices and services may be offered from the first purchase of the system or could be added later thanks to the high scalability of the system.

Until now, no appliances or devices able to help, support or maintain good eating habits of elderly persons have been developed or commercialized. In fact, current home use food processors and cooking appliances are all designed for and targeted at a middle age audience.[2] ChefMySelf will provide an innovative service model

[1] For instance, project *HOPE* or project *Happy Ageing*.
[2] According to TAURUS market prospection.

joining in a bundle all the different support activities needed to plan and carry on convenient health nutrition at home.

What services and solutions will be made available as a result of the ChefMySelf project?

ChefMySelf operative objectives

The primary focus of the envisioned solution is to increase the motivation of elders to adopt healthy eating habits. Firstly, by supporting them to eat well and healthy and secondly by performing activities through the participation in virtual social networks. The cooking activities directly support elders' eating habits, avoiding nutritional problems related to ageing[3].

To achieve the overall aim of ChefMySelf project the following end-results are identified:

1) A context aware, recipe library: A human and machine readable, context aware library of recipes will be created, specifying the preparation of different meals.[4] The library will be based on semantic technologies and use machine learning techniques to enable features like:

- **Advanced reasoning based on the user context:** The library will be able to reason which kind of food is more suitable taking into consideration the user context: certain type of food might not be suitable for people facing overweight or diseases (e.g. diabetes).
- **Advanced ways to reach the recipes:** The recipe library can be searched by different facets, for instance ingredients, calories, nutrition information, price, or preparation time. In addition, the library will offer a keyword based search, which will make use of the semantic information in the library.
- **Learning user preferences:** The library will learn the user preferences by monitoring the interaction of the user, for instance the system might learn that a user does not like certain ingredients, since she/he never chooses any recipe containing this ingredient.

[3] "Age-specific nutritional recommendations may help to decrease the incidence or severity of age-related debilitating chronic disorders." Aging and longevity: why knowing the difference is important to nutrition research. McDonald RB, Ruhe RC, 2011.

[4] The Semantic Web; Berners-Lee, T. Hendler, J. Lassila, O.; Scientific American 2001, Vol. 284; Part 5.

- **Context aware ranking of recipes:** Search results (recipes) will be prioritized according to specific user needs. Recipes which are not suitable for the user will be filtered out or will show a warning message. The ranking process will also take the user preferences and the meal history into account, in order to guarantee a variable healthy diet.
- **Automatic diet planning:** By observing the meal history along with the user needs and preferences, the system can automatically create a meal plan that ensures quality and variety in the diet of the elder, which is closely adapted to the user's needs and preferences.

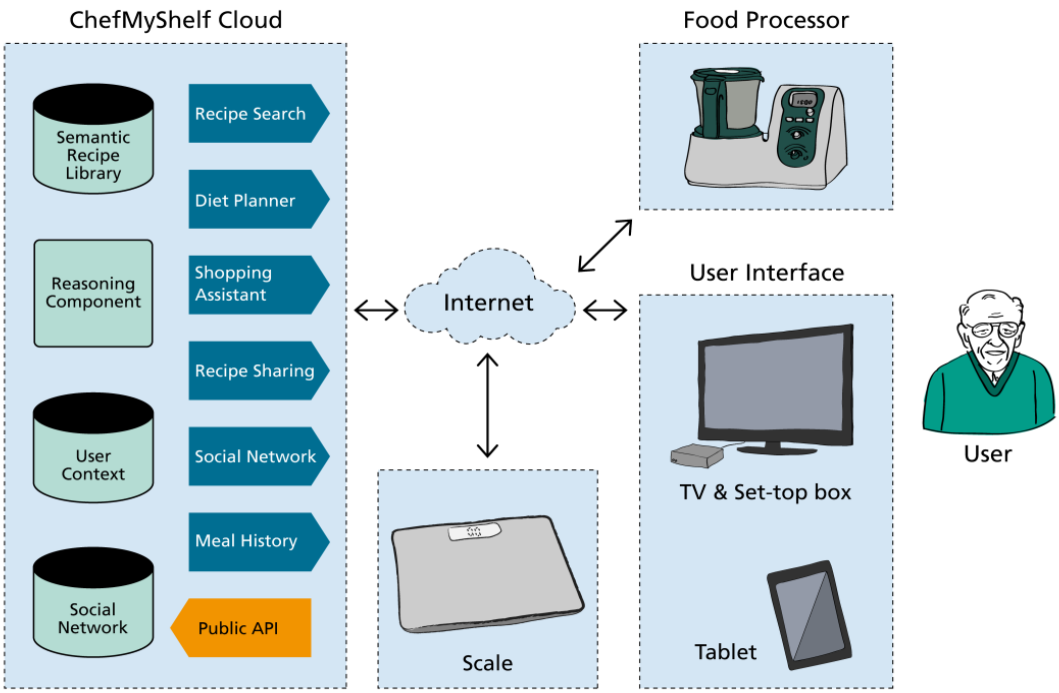
2) Promotion of daily activities of elders with a special focus on healthy eating habits: The ChefMySelf solution will support regular activities of elderly users by offering them:

- **Preparation assistance:** A highly usable step-by-step guide for meal preparation will be developed. It will be closely aligned to the special usability requirements of elderly users and can be used on a tablet based device and/or a TV (through a set-top box)[5]. The tablet or the set-top box transfers the preparation instructions to the food processor, in order to guide the user on the preparation of a previously chosen meal and gives step-by-step information on how to prepare it.
- **Shopping assistance:** Based on used ingredients during meal preparation and/or the weekly meals plan, the system can compile a shopping list for the elder. The list can be used for personal shopping but could also be transmitted to a caregiver or delivery service in case the elderly person has limited mobility.
- **Review of meal history:** The system will enable the seniors, but also relatives and carers, to review the meal history and see certain statistics, for instance calorie and nutrition consumption per day/week and its comparison with recommended values, detection of uncovered needs…

3) Motivation through participation in a virtual social network: In order to motivate the users towards the adoption of healthy eating habits, the ChefMySelf solution will offer a virtual social network component, specially tailored to the needs of the targeted audience. The virtual social network will enable seniors to:

[5] User interface development will follow guidelines especially focusing on elders' needs and their interaction capabilities, such as the ones reported on Nielsen, J. and Coyne, K. "Web Usability for Senior Citizens: 46 Design Guidelines Based on Usability Studies with People Age 65 and Older", 2002.

- Share prepared meals with others and keep their friends informed about their current eating status.
- Share own recipes with the community using a simple and intuitive tablet device user interface.
- Comment other users' recipes and suggest alterations.
- Exchange messages using textual or multimedia messages like audio or video recordings.
- Encourage users to continue establishing relations and to participate in social events (e.g. dinner together).
- Promote outdoor and joint activities such as social shopping with the users in the vicinity.



In order to achieve the above mentioned objectives, the work of the project partners is divided into seven sections (Work Packages) that together deal with the large body of tasks that need to be accomplished on the way to fully developing and implementing the described technology into the market. From user requirements to technology development and market strategies, all the work is thoroughly planned into the following sections:

- WP1 Project Management
- WP2 User requirements and concept definition
- WP3 Design and development of cloud computing based services
- WP4 Design and development of user interfaces

- WP5 Design and development of personal cooking assistant
- WP6 System integration, testing, assessment and evaluation
- WP7 Dissemination and exploitation

What's planned for the coming months?

As the initial phases of work have already been performed for now the goal is to fully develop the technical aspects of the offered solution.

The following areas of work will be covered in the project in the next months:

Design and development of the cloud computing based services:

1. The Cloud server's architecture definition
2. Design and implementation of the data store
3. Contents production and digitalization
4. Specification of the cloud computing based services and its interfaces
5. Design and implementation of caregivers environment
6. Unitary tests, verification and validation

Design and development of the user interfaces:

1. Interface architecture design
2. Design and implementation of the TV interface
3. Design and implementation of the tablet device interface

Design and development of personal cooking assistant and system integration:

1. Hardware specification
2. Design of the personal cooking assistant interface
3. Design of communications
4. Implementation and integration of the personal cooking assistant interface

The ChefMySelf project has a strong potential to IMPROVE ELDERS' EATING HABITS through the creation of SERVICES FOR RECIPE CONSULTATION AND DIET PLANNING. The tight integration with a personal food processor will also support the PREPARATION OF HEALTHY MEALS, by offering step-by-step assistance during the meal preparation process.

The consortium of the ChefMySelf project is made up of two END-USER entities, two SMEs, one INDUSTRIAL COMPANY and two R&D partners. The technical expertise and end-users' knowledge will assure the success of the proposal by designing and adapting the ChefMySelf solution to elders and their needs.

7 European partners are involved in ChefMySelf:

- For the Management – CETEMMSA
- For Dissemination and Exploitation – ASM – TAURUS
- For the user perspective - INRCA – UNIEKBO – METEDA - FHP-AICOS
- For the development of the solution - FHP-AICOS – TAURUS – CETEMMSA.

Project Partners:

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