LIFANA

Lifelong Food and Nutrition Assistance

AAL-Call-2017-013

Start date: 1 May 2018

Duration: 36 months

D3.1-C "SCENARIOS AND PERSONAS (FINAL)"

Revision history

Rev.	Date	Partner	Description
0.1	01.07.2018	LIST	Document created
1.0	31.10.2018	FhP, LIST, CER	Contributions from partners
1.1	19.12.2018	LIH	Reviewing and comments
1.2	25.02.2019	LIST	Avatar images added
2.0	26.02.2020	FhP, LIST	Updated scenarios, removed scenarios that were not implemented.
3.0	23.10.2020	LIST, KBO, SCMP, CER	Two-hour workshop to update personas based on results from user integration activities in WP3.
3.1	29.10.2020	SCMP	Contribution from Silvia Jesus to persona 5.

Consortium

Participant nº	Participant organisation name	Participant short name	Organisation type	Country
1 (Coordinator)	Luxembourg Institute of Science and Technology	LIST	Research	Luxembourg
2	Luxembourg Institute of Health	LIH	Research	Luxembourg
3	Associação Fraunhofer Portugal Research	FhP	Research	Portugal
4	Sonae Center Serviços II, S.A.	SONAE	Company	Portugal
5	Santa Casa da Misericordia do Porto	SCMP	End-user	Portugal
6	Gociety Solutions	GOC	Company	Netherlands
7	Unie KBO	KBO	End-user	Netherlands
8	cereneo Schweiz AG	CER	Company	Switzerland
(8*) (subcontract from CER)	cereneo - Zentrum fur Interdisziplinare Forschung	CEFIR	Research	Switzerland

Acknowledgements

Disclaimer

Table of contents

INTRODUCTION

This document details the personas and related scenarios developed for the LIFANA system. These personas[12] and scenarios were build based on the insights gathered from the co-creation sessions with primary end-users and the needs of the nutrition experts (secondary end-users). The content of this document will guide the technical development of the system by providing the consortium with a better understanding of the most important target users and stakeholders throughout all phases of development.

The second iteration of this document (D3.1-B) has been revised at mid-term according to the implemented features of the beta prototype and the feedback received from the field trials, Personas and Scenarios that are not supported have been removed, but can still be found in the first version (D3.1-A).

The third iteration (D3.1-C) has been finalised after the end of the field trials in a two-hour workshop on 23.10.2020 together with the coordinator LIST (Christoph Stahl), the end-user organisations KBO-PCOB (Nora Ramadani) and Santa Casa do Porto (Silvia Jesus) and the clinical partner cereneo (Krizia Ferrini). The personas were reviewed and edited in order to better represent the average participants of the trials in the respective countries. Focus has been on age, gender, education, disabilities and eating behavior. Further, we added examples of typical meals for the age group in the Netherlands and Portugal.

---

[1] Cooper, A. (2008). The origin of personas.
http://www.cooper.com/journal/2008/05/the_origin_of_personas

[2] Cooper, A. (1999). *The Inmates are Running the Asylum*: SAMS.

PERSONAS

This section describes the personas identified through the focus groups and workshops. Persona provide a description of archetypical end-users or stakeholders, specifying their characteristics or demographics. We provide details about their lifestyle, education, chronic conditions, and affinity with technology. Personas were categorized in primary or secondary personas. Primary personas are the elderly users of the system. Secondary personas are other users who interact with part of the system such as caregivers, or nutrition experts, family members (daughter, son, wife, partner). In total, eight personas are described in this section.

Persona 1: Emma

Type of user:	Elderly active user (Primary)
Country:	Netherlands
Age:	67
Family status:	Married
Education:	Vocational education
Profession:	Public sector, just retired
Disabilities:	None
Chronic conditions:	None
Food Intolerance or allergy:	Nuts

Goals

- *Emma questions her current eating habits and feels guilty if she enjoys tasty but unhealthy deep-fried dishes meals in a snack bar;*
- *she is interested in trustful information and educational material;*
- *She wants to keep her BMI stable by balancing calories and fitness activities;*
- *She is willing to change her eating habits in order to prevent malnutrition;*
- *She loves inspiring and healthy recipes.*

Emma is 67, lives in the suburbs of Utrecht, has just retired and is an avid cook. During the week, she mostly had lunch with her colleagues in the canteen, even though she was questioning if the type of food served is really that good for her. She has always been interested in healthy and good, tasteful food. Having an allergy, Emma must avoid products and meals that contain nuts. Now that Emma has retired from work, she has more time to enjoy her passion: cooking! She wants to spend part of her well-deserved spare time to learn more about food and nutrition. Emma prefers traditional Dutch dishes, but she likes to try something new from time to time. She is also planning to spend more time on physical exercise. Emma is very proud that she is still looking well and staying in shape. In time, she feels that her condition is more and more decreasing, and that her body is changing. She has gained a few kilo's and her muscle power decreases. Emma is using her tablet computer to stay in contact with her friends on Facebook and occasionally posts pictures of her creative dishes and gets excited when she receives positive comments. She also uses her smartphone to manage her shopping list, and to look up recipe ideas on the internet several times a week. She is

also aware of the growing market of fitness trackers and nutrition apps and already tried to lose weight with some of them but didn't succeed.

On a typical day, Emma takes the following meals:

- Breakfast: 2 slices of whole grain bread with cheese and 'boterhamworst', slice 'ontbijtkoek', a cup of tea, and a glass of fresh orange juice.
- After breakfast she has some snacks: 2 small espresso and a cookie.
- Lunch: 2 slices of whole grain bread with meat salad and salami, a glass of ice-tea. later: a glass of water.
- Between lunch and dinner, she has an evening snack: a slice of cake, 1 glass of juice and 2 glasses of water.
- Diner: Beef broth with asparagus, vegetarian chicken pieces with Dutch vegetables mix with potatoes and two glasses of water Evening snack: 2 glasses of water, 1 glass of juice and a slice of cake.

Persona 2: Jan

Type of user:	Elderly user, in need of care (Primary end-user)
Country:	Netherlands
Age:	83
Family status:	Widowed
Education:	Professional education at University
Profession:	Hotel manager
Disabilities:	Limited mobility, needs walker
Chronic conditions:	Lack of vitamin D, risk of obesity
Food Intolerance or allergy:	None

Goals

- *Jan wants to lose some of the weight he gained in the past few years;*
- *He likes convenient and healthy meals that he can prepare with little effort.*

Jan's health has been deteriorating since he retired more than 15 years ago. He was never a good cook, it was always his wife who took care of the meals. Unfortunately, she passed away and his children are living in different parts of the country. Walking is a struggle since a hip replacement 5 years ago. Because of this lack of physical activity, he has become a bit overweight in the past years. Jan is sure he knows how to keep his body fit and healthy. But he would appreciate some help to maintain his weight and general advice about healthy food. Living in a rural area, Jan needs his car to drive to a shopping center. Despite his limited mobility, Jan prefers to stay independent and do his daily shopping on his own. Jan might not be a great cook or even take pleasure in cooking but knows enough to get by. On average, Jan doesn't want to spend more than 30 minutes to prepare his lunch. He takes three meals a day and avoids having snacks in between. He enjoys eating, though, more than he should considering his low physical activity and is therefore in risk of becoming obese. When he still managed the hotel 20 years ago, Jan was among the first to use the Internet to communicate with his guests by Email. But always struggled to understand the concepts behind IT and to cope up with new technologies. He complains a lot of usability issues with consumer devices and prefers Apple products over Android. In his private life, he is concerned about his privacy,

Persona 3: Maxime

Type of user:	Informal caregiver (Secondary end-user)
Country:	Netherlands
Age:	50
Family status:	Married
Education:	University
Profession:	Teacher
Disabilities:	NA
Chronic conditions:	NA
Food Intolerance or allergy:	NA

Goals

- *Maxime helps her father with the weekly shopping and preparation of food;*
- *She wants to improve communication;*
- *She has to check if products are suitable for Jan's diet restrictions and in line with recommendations from nutrition expert's advice.*

Maxime has been looking up to her father Jan more often since his operation to the hip. Since her father cannot drive anymore and his mobility is limited, Maxime is the one who drives him to medical appointments and other activities. She also helps Jan with his groceries and tries to have an eye on Jan's health. Maxime is quite interested in technology and is always trying to be updated on the latest trends. She does not care much about how it works as long as it helps her to be more efficient in daily tasks. She gave her father a smartphone and is always encouraging him to learn and try new apps. She hopes to make the communication with Jan more efficient so that she has more time for her still at home living children and her intensive job at school. She considers to discuss with her father the possibility of food delivery or ready-made meals.

Persona 4: Anne

Type of user:	Nutrition expert (Secondary end-user)
Country:	Netherlands
Age:	36
Family status:	NA
Education:	High school
Profession:	Dietician
Disabilities:	NA
Chronic conditions:	NA
Food Intolerance or allergy:	NA

Goals

- *Anne is looking for solutions to improve communication with her clients, such as Jan, and to make personalized meal recommendations.*

Anne is dietician and elderly clients are her passion. She is specialized in nutritional advices for 65+ clients. Anne is happy with her job at the care centre in the middle of the country. She is not only accompanying seniors that are hospitalized in the care centre, but is also supporting the elderly that are send by the general practitioner, informal caregiver or home care. By far, undernutrition is the main reason people are visiting her. She has only a few private clients because people think it's too expensive to go to a dietitian, and the basic health insurance only covers three hours a year.

Anna is doing everything (often 85+ clients) with pen and paper. Because the nutritional information given for recipes is usually not reliable, one of her main tasks is to estimate the nutritional values for recipes manually using the national Dutch food composition database called NEVO. Anne also adapts the recipes to the individual needs of the clients by replacing one or more ingredients. She is interested in technology to ease these time-consuming tasks so that she can use the three hours per client in a more efficient way, but she doesn't know any other way on the "nutrition market" that could support her clients. She is also curious to figure out what her possibilities are as a dietician, also how to follow up with her clients in a better way.

Persona 5: Maria

Type of user:	Elderly active user (Primary end-user)
Country:	Portugal
Age:	66
Family status:	Widow
Education:	Elementary school
Profession:	Housewife
Disabilities:	None
Chronic conditions:	None
Food Intolerance or allergy:	None

Goals

- *Maria wants to ease the task of deciding what to cook;*
- *She knows her current lifestyle is not ideal, and she is trying to make changes to her diet;*
- *She is trying to learn how to get inspiration for new dishes by using her smartphone and the Internet;*
- *Maria has been cooking all her life by in, but now she is more conscious about what she eats, she is trying to learn more about nutrition and food.*
- *She has to manage a tight budget for food.*

Maria is a housewife living in the Porto city centre and she spends her afternoon on a day-care centre with her friends and to have lunch there. She has been cooking all her life for her kids and husband and she wouldn't bother if the cooking took 1 to 1.5 hours. She liked to prepare food from raw ingredients because she felt this was healthier and also cheaper than to buy pre-made food. She is used to a traditional Portuguese diet and is not willing to change that. Now, although she doesn't dislike the task of cooking itself, she lives alone since her husband died five years ago and the children finished school, so she has lost the motivation to cook. She finds the process of deciding what to cook for each meal very unpleasant so she is looking forward for a solution that will help her on that decision. She feels that she would be more interested in this task if she had more tips about which oil to use on her cooking, how to prepare foods to preserve vitamins and more ideas for cooking dishes. Maria doesn't have a driver's licence which makes it hard to go shopping. Hence, she visits the local supermarket almost every day buying only the food for that day, so she doesn't have to carry heavy bags. Although this limitation, she is a little suspicious about the new home delivery services offered by her supermarket because she likes to touch, smell and see the food she buys. However, she is willing to try if it proves to be an easy task for her and if it doesn't mean more spending on food. She doesn't have much experience with technology but recently received a smartphone from her son, so they can always stay in touch.

Maria usually takes 3 to 4 meals per day, which includes breakfast, lunch, afternoon snack and dinner. For breakfast, which she considers a key meal, she prepares for herself something easy that is typically bread with butter and milk with coffee. At lunch she eats soup and the main meal is for example chicken steak with rice and vegetables or salad. The dessert is usually fruit, such as an apple. For dinner, unless her children are visiting, she doesn't bother to cook a full meal, eating the leftovers from lunch or just

soup and seasonal and local fruits, which are sweet and cheap, like oranges, bananas and apples. Maria has always tried to be careful with what she eats but feels that she doesn't always eat what she should mainly at protein level.

Persona 6: Julieta

Type of user:	Stroke patient (Primary end-user)
Country:	Switzerland
Age:	65
Family status:	Divorced
Education:	Elementary school
Profession:	Housewife
Disabilities:	Dysphagia, left arm paralysis
Chronic conditions:	Diabetes
Food Intolerance or allergy:	None

Goals

- *Julieta has to manage her disease and health condition;*
- *She wants to receive continued care from clinic at home;*
- *She wants to have access to meal planning components, approved by her main nutrition specialist;*
- *She would like to receive information about kitchen helpers, and recipes that are easy to prepare;*
- *She hopes to regain as much independence as possible.*

Julieta diabetic woman suffered a stroke 4 months ago. After being discharged from the hospital, she has spent the past 3 months in a rehabilitation clinic, where she receives dedicated care and guidance on how to deal with the disability occasioned by the stroke.

The stroke left Julieta with severe dysphagia (swallowing difficulties), among other impairments. In addition, due to her age and her pre-existing diabetic condition, her food options are limited. At the rehabilitation clinic, Julieta's daily menu is specially tailored by a nutrition specialist, who considers her current and pre-existing conditions, medications, and results from laboratory analysis (e.g. blood, urine and stool). Her weight, food and fluids intake are closely monitored. In addition, Julieta receives one-to-one guidance from a speech therapist on how to deal with her swallowing problems while eating. She has to relearn skills that are suddenly lost when part of the brain is damaged. The treatment has been customized to practice those skills impaired due to the stroke, such as weakness, lack of coordination, problems with hand grasp, visual loss, or trouble speaking or understanding. Due to her impairments, she had severe problems to use her smartphone. Now she has switched to a tablet computer with large display. Innovative methods and devices can be used to guide new therapeutic approaches and augment existing ones but there is no solution that address the management of Nutrition Status in stroke patients.

Julieta will be discharged from the rehabilitation clinic soon, as she is already able to deal with some of her physical limitations (e.g. walking, difficulties with activities-of-daily-living). The nutrition specialist has provided Julieta with dietary recommendations on how she should keep eating at home. However, the contact between Julieta and her nutrition

specialist and speech therapist will be broken after discharge, as it usually happens, which leaves Julieta at high risk of malnutrition.

Cutting and slicing is probably the hardest part of cooking after a stroke at home. Adaptive eating, drinking and feeding aids can help Julieta with these activities of daily living.

Persona 7: Christina

<table>
<tr><td>Type of user:</td><td>Nutrition expert
(Secondary end-user)</td></tr>
<tr><td>Country:</td><td>Switzerland</td></tr>
<tr><td>Age:</td><td>65</td></tr>
<tr><td>Family status:</td><td>NA</td></tr>
<tr><td>Education:</td><td>University degree</td></tr>
<tr><td>Profession:</td><td>Nutritionist in clinical environment</td></tr>
<tr><td>Disabilities:</td><td>NA</td></tr>
<tr><td>Chronic conditions:</td><td>NA</td></tr>
<tr><td colspan="2">Food Intolerance or allergy: NA</td></tr>
</table>

Goals

- *Christina wants to stay in close contact with her patients after discharge through technology monitoring the patient´s nutritional status and other nutrition related parameters (such as weight, swallowing function, blood glucose levels, blood pressure, amount of physical activity, follow-up laboratory tests) with the potential of adjusting the nutritional recommendations, weekly meal plans and shopping list, if needed;*
- *She needs to communicate any urgent changes (e.g. change in insulin) with the nutrition specialist/clinical team, through a telephone call or written message, outside the foreseen tele-consultations.*

Christina is a Nutrition Specialist (Registered Nutrition Dietitian, PhD) at a Neurorehabilitation clinic and educating patients about nutrition and administering medical nutrition therapy as part of the health-care team. She is planning and implementing the Nutrition Care Plan by consulting Evidence-Based Nutrition Practice Guidelines and conducting experiments to answer critical nutrition questions enhancing inter-professional health care teams.

Christina can assess a patient's energy, protein, micro and macro nutrient requirements, developing effective treatment plans in artificial feeding, modified consistency diets/fluids and food first approaches at the clinic. She cannot support her patients after their discharge from the clinic.

The practice of clinical dietetics and involvement with other professionals include working with medical teams and Therapists. As Nutrition Specialist she is collaborating with neuropsychologists and speech therapists with patients having dysphagia and physical impairments. She is active coordinating the counselling methods helpful for daily life for the cooking groups. She would like providing remote monitoring at home with mobile Health technology application in order to follow up the patients' Nutrition Status and for the development of new recipes.

Scenarios

Scenarios describe the behavioural patterns of the personas that are presented in the previous section. According to Goodwin[3], "a scenario is a plausible description of the future based on a coherent set of assumptions". In our case scenarios describe personas in relation to the future use of the LIFANA solution.

Emma

Scenario 1.1: Keeping a nutrition journal

From time to time, Emma still meets her former colleagues in the canteen. Now that she is in contact with Anne, a nutritionist, she is curious about the calories of the meals in the canteen. On these days, she refuses the suggested dish in the meal plan: she cancels the recommended meal in the plan and gives feedback about the meal she had using a simplified score function. In addition, she takes a picture of what she ate and uploads it into her LIFANA nutrition journal to share it with the nutritionist. The nutritionist will have a look and, based on her experience, estimate the calories that will be added to the plan. At the end of the month, Emma will meet her nutritionist Anne again and receive feedback about the meals she had in the canteen.

---

[3] Goodwin, K. (2009). *Designing for the digitale age: how to create human-centered products and services*. Indianapolis, Indiana: Wiley Publishing.

Jan

Scenario 2.1: Meal planner

Jan knows he must lose some weight but that's difficult to do without help and motivation. He is always losing track of what and how much he ate, and it's hard for him to know if he is not eating too much. LIFANA creates every week a meal plan for Jan that has just the right amount of calories. Usually LIFANA also recommends convenient meals to him that are easy to prepare, since Jan doesn't want to spend much time on cooking. Some recipes are even individually scaled for him to make sure he will meet his weight goals every month. To be honest, Jan is becoming more forgetful during the passing of the years.

Scenario 2.2: Receiving professional advice from Anne

Jan gets support from a nutritionist, on the advice of his General Practitioner. Together with Anne, his nutritionist, and accompanied by his daughter Maxime, he discussed his eating habits and made a meal plan to help him lose weight and cook in a simple but tasty way. Jan can find his personalized meal plan in LIFANA. Because Jan gave Anne permission to access his user profile, she can also follow the steps Jan has taken to improve his diet. To help Jan manage his weight, his doctor told him to weigh himself every week and bring the results on the next appointment with the General Practitioner. Jan is now using his new app to log his weight and to analyse the trend.

Maxime and Jan

Scenario 3.1: Jan receives shopping support from Maxime

Jan no longer can go to the store by himself and carry heavy weight, so his daughter Maxime is supporting him with the shopping once a week. Usually Maxime calls Jan to ask what he needs. However, this is not very practical since Jan tends to forget at least one thing for the meals that he planned. With LIFANA, Maxime can easily check what exactly she needs to buy for him according to his meal plan. LIFANA automatically creates a shopping list that she can access from her smartphone in the supermarket.

Anne and Jan
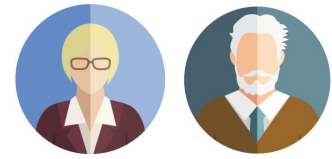
## Scenario 4: Personalized meal plan for Jan

Most elderly people that request support from Anne come with undernutrition. This is often about product choices; if everything is light and low fat – replace this with full. You can enlarge the portions - two slices of cheese instead of one. Very personalized food recommendations but the core is most of the time the same: more calories and egg whites need to be consumed.

Using LIFANA, Anne's clients learned to use a smartphone and receive full meal plans for the week that consider the calories needed according to general guidelines. Anne can use her tablet computer to follow the nutritional goals of the meal-planning algorithm per client based on her experience and background knowledge. She will also meet the clients regularly to validate their health status. Anne can also modify the meals and recipes for each client individually to increase the calories, as she did before with pen and paper. Using LIFANA, she can perform her routine tasks more efficiently and spend the time with her clients in a more personal way.

'Second best' are seniors who develop overweight. Jan is one of them. By using LIFANA Anne can support Jan in his attempts to lose weight. Together they set goals in the app, including meal plans. Anne can send reminders and personal feedback. She is very curious if the LIFANA application will also be helpful when Jan no longer gets support of a nutritionist. That would be great.

Maria
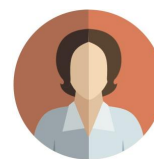
Scenario 5.1: Meal recommendations

Maria already knows how to cook dishes that she likes, but she is also aware that her current lifestyle is not ideal, so she is trying to make changes to her diet. She is trying to learn how to use her smartphone to get inspiration for new dishes from the internet but coming up with a balanced diet every day is a tiresome task. While the internet is full of recipes and diet suggestions, it is also overwhelming and hard to decide for something new. She would prefer having someone recommending her recipes, so she would just have to cook it. With LIFANA she is able to focus on her cooking instead of worrying too much about the nutritional values.

Scenario 5.2: Grocery shopping support

Maria wants to buy the list of ingredients reported on her favourite recipes. She usually writes on a piece of paper what she needs to buy from the grocery store, but sometimes she forgets to add products to the list. Now that she has meal plans recommended to her by LIFANA, she can save the ingredients she needs and consult the grocery shopping list in the application. LIFANA can also be used in an in-between manner as Julieta pre-plans purchases ahead of time, using a tailored interface in the LIFANA app before heading to the store. She will no longer forget those important products.

Julieta

At the rehabilitation clinic, Julieta's daily menu is specially tailored by a nutrition specialist, who considers her current and pre-existing conditions, medications and results from laboratory analysis (e.g. blood, urine and stool). Her weight, food and fluids intake are closely monitored.

Her nutrition specialist has provided Julieta with dietary recommendations on how she should keep eating at home. However, the contact between Julieta and her nutrition specialist will stop after discharge, as it usually happens, which leaves Julieta at high risk of malnutrition.

In addition, Julieta receives one-to-one guidance from a speech therapist on how to deal with her swallowing problems while eating. Julieta will be discharged from the rehabilitation clinic soon, as she is already able to deal with some of her physical limitations (e.g. walking, difficulties with activities-of-daily-living). It's hard to eat healthy when you have trouble swallowing, chewing, or using eating utensils.

Scenario 6.1: Personalized meal plan

Nutrition has one of the most important life-long environmental impact on rehabilitation. The clinic has provided the LIFANA solution to Julieta on her discharge so that she continues to receive a personalized meal nutrition plan at home. The plan considers her personal health needs including her personal health history, family health history, and what her health goals are. What might be a great pattern of eating for someone else, could be unhelpful or potentially dangerous for another person due to a certain health condition such as diabetes or kidney disease. The LIFANA app helps Julieta to learn how the body handles carbs, fat, protein and know right away where she is doing well and where she has opportunities to optimize her swallowing problems with nutrition, by suggesting her more suitable food.

Christina and Julieta

Scenario 7: Personalized tele-nutrition monitoring

The LIFANA solution supports Christina's daily work as nutrition expert in the clinical environment. Personalised food and health advice help her client, Julieta, to make healthy choices in a way that best suits her; choices that suit what her body needs as well as their personality and social environment. Christina can estimate the essential status of essential nutrients in Julieta's body using measurements of nutrient intake as a proxy outside the clinic. She is not able to prepare the recipes as before. Thanks to the personalized recipes created in LIFANA she can get useful advice.

The LIFANA solution helps Christina to monitor Julieta's daily food dietary intake, using the latest scientific evidence-based guidelines and databases ("recipe calculation"-EUROFIR; EFSA nutrient reference values). Christina uses the LIFANA solution for a better detailed procedure for the calculation of food consumed by her clients.