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## D2.2 User Requirements Collection (Second Iteration)

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## 1. Introduction

CoME aims for a service that facilitates health self-management for seniors, but also the interrelation of different actors (seniors, informal caregivers and formal caregivers). With this interrelation and with the data obtained through wearable devices from the senior, patterns about the daily activities and his lifestyle could be detected. In the platform all the actors will find reliable information about ageing and important aspects in chronicity, especially those topics related to prevent MCI.

To ensure the success of the CoME service is fundamental to explore the needs and experiences of the different scenarios involved –Elderly Non MCI Diagnosed, Informal Caregivers and Formal Caregivers– using that knowledge to make the CoME service suitable for all end-users.

## 2. Methodology

To explore the needs and experiences of every scenario semi-structured interviews on the target population of end-users will be conducted assuring the **data saturation**. Different scripts for every scenario were agreed among the partners of each country (for further information about scripts consult *deliverable 2.1 User Involvement Plan*).

In **Lleida (Spain)** and **Szombathely (Hungary)**, **18 seniors, 13 informal caregivers** and **9 formal caregivers** were interviewed; also **5 more informal caregivers** were interviewed in **The Netherlands**. For interviews, equal distribution for age, gender and environment (rural/urban), under the inclusion criteria described in the deliverable 2.1 User Involvement Plan were taken into account. Please, consult this deliverable for more detailed data about the distribution.

## 3. Interviews Evaluation

The following table summarizes the end-users involvement in the interviews for the user requirements phase.

Part of the recruitment and inclusion process was done in Lleida via direct approach by members of the IRB Lleida team within the grounds of Hospital Universitari de Santa Maria-GSS and the contacts made by health professionals involved in the Grup en Recerca en Cures en Salut (GRECS) from IRB Lleida and HSM-GSS.

In The Netherlands, ConnectedCare used its existing network of informal caregivers to identify possible participants and approach them via email.

In Hungary, PBN recruited the participants by direct approach as well, using personal contacts and through the support of General Practitioners network and elderly homes.

Interviews Evaluation Summary																																																																					
<b>Type of end-user (primary, formal and informal secondary, tertiary end-users)</b>	Primary end-users, informal and formal caregivers (secondary end-users) were interviewed along 8 <sup>th</sup> February 2016 and 14 <sup>th</sup> March 2016. (see deliverable D2.1)																																																																				
<b>Total number of end-users involved (by type of end-user, gender, etc.)</b>	<p><b>Total number of end-users involved for the requirements analysis: 45</b></p> <p>For the requirements analysis, Hungarian, Spanish and Dutch partners followed the same methodology. They conducted semi-structured interviews, agreed with the partners of Hungary, Spain and The Netherlands. The script of the interview in English, Catalan and Hungarian can be consulted in the deliverable D2.1 User Involvement Plan</p> <p>Data for Hungary</p> <table border="1"> <thead> <tr> <th></th> <th colspan="2">Primary</th> <th colspan="2">Secondary: Informal</th> <th colspan="2">Secondary: Formal</th> </tr> <tr> <th>Gender</th> <th>M</th> <th>F</th> <th>M</th> <th>F</th> <th>M</th> <th>F</th> </tr> </thead> <tbody> <tr> <th>Number</th> <td>4</td> <td>4</td> <td>3</td> <td>5</td> <td>2</td> <td>3</td> </tr> </tbody> </table> <p>Data for Spain</p> <table border="1"> <thead> <tr> <th></th> <th colspan="2">Primary</th> <th colspan="2">Secondary: Informal</th> <th colspan="2">Secondary: Formal</th> </tr> <tr> <th>Gender</th> <th>M</th> <th>F</th> <th>M</th> <th>F</th> <th>M</th> <th>F</th> </tr> </thead> <tbody> <tr> <th>Number</th> <td>5</td> <td>5</td> <td>1</td> <td>4</td> <td>2</td> <td>3</td> </tr> </tbody> </table> <p>Data for The Netherlands</p> <table border="1"> <thead> <tr> <th></th> <th colspan="2">Primary</th> <th colspan="2">Secondary: Informal</th> <th colspan="2">Secondary: Formal</th> </tr> <tr> <th>Gender</th> <th>M</th> <th>F</th> <th>M</th> <th>F</th> <th>M</th> <th>F</th> </tr> </thead> <tbody> <tr> <th>Number</th> <td>-</td> <td>-</td> <td>2</td> <td>3</td> <td>-</td> <td>-</td> </tr> </tbody> </table>							Primary		Secondary: Informal		Secondary: Formal		Gender	M	F	M	F	M	F	Number	4	4	3	5	2	3		Primary		Secondary: Informal		Secondary: Formal		Gender	M	F	M	F	M	F	Number	5	5	1	4	2	3		Primary		Secondary: Informal		Secondary: Formal		Gender	M	F	M	F	M	F	Number	-	-	2	3	-	-
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<b>Average age and age distribution of involved end-users</b>	<p><b>Requirements analysis</b></p> <p>Data for Hungary</p> <table border="1"> <thead> <tr> <th></th> <th colspan="2">Primary</th> <th colspan="2">Secondary: Informal</th> <th colspan="2">Secondary: Formal</th> </tr> <tr> <th>Gender</th> <th>M</th> <th>F</th> <th>M</th> <th>F</th> <th>M</th> <th>F</th> </tr> </thead> <tbody> <tr> <th>Mean Age</th> <td>70</td> <td>68,5</td> <td>48,6</td> <td>40,8</td> <td>60</td> <td>44,3</td> </tr> </tbody> </table> <p>Data for Spain</p> <table border="1"> <thead> <tr> <th></th> <th colspan="2">Primary</th> <th colspan="2">Secondary: Informal</th> <th colspan="2">Secondary: Formal</th> </tr> <tr> <th>Gender</th> <th>M</th> <th>F</th> <th>M</th> <th>F</th> <th>M</th> <th>F</th> </tr> </thead> <tbody> </tbody> </table>							Primary		Secondary: Informal		Secondary: Formal		Gender	M	F	M	F	M	F	Mean Age	70	68,5	48,6	40,8	60	44,3		Primary		Secondary: Informal		Secondary: Formal		Gender	M	F	M	F	M	F																												
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	Mean Age	76,6	71,2	57	56	47	41,6
	Data for The Netherlands						
	Primary		Secondary		Secondary: Formal		
Gender	M	F	M	F	M	F	
Mean Age	-	-	58,5	54	-	-	
OVERALL	Primary		Secondary: Informal		Secondary: Formal		
Mean Age	71,6		52,48		48,22		
<b>Location of end-user (rural, town, large city, etc.)</b> Differences among the population living in an urban environment and those living in a rural environment have been taken into account. These differences cover, among others, differences regarding technology acceptance, relation with the informal and formal caregivers and daily activities.	<b>Hungary</b>						
	Rurals	0					
	Urban	20					
	<b>Spain</b>						
	Rurals	12					
Urban	8						
<b>Situation of end-users (single household, family setting, independence, etc.)</b>	<b>Hungary</b>						
	Family setting	18					
	Single household	2					
	Nursing home	0					
	Other	0					
	<b>Spain</b>						
	Family setting	17					
	Single household	3					
	Nursing home	1					



	Other																																																													
<b>Health status (disabilities, mobility, cognitive function, etc.)</b>	<ul style="list-style-type: none"> <li>In Hungary, 100 % of the senior participating to the user requirements phase were overall healthy, not with MCI diagnosed</li> <li>In Spain, 100% of the seniors participating to the user requirements phase were not MCI diagnosed. 80% of the senior had health issues related with the age such as blood pressure or diet control. One was a cancer survivor and one had pulmonary emphysema.</li> </ul>																																																													
<b>Socio-economic background (education, income class, etc.)</b>	<p>Socio-economic background of the end-users is available only for the seniors and informal caregivers. It was not asked for the requirements analysis (using the International Standard Classification of Occupations), and obviously it is not provided for formal caregivers.</p> <p><b><u>Hungary</u></b></p> <table border="1"> <thead> <tr> <th></th> <th>Primary</th> <th>Informal secondary</th> </tr> </thead> <tbody> <tr> <td>Managers</td> <td>2</td> <td>1</td> </tr> <tr> <td>Professionals</td> <td>5</td> <td>2</td> </tr> <tr> <td>Technicians</td> <td></td> <td></td> </tr> <tr> <td>Clerical</td> <td></td> <td></td> </tr> <tr> <td>Service/sales workers</td> <td></td> <td>6</td> </tr> <tr> <td>Agriculture</td> <td></td> <td></td> </tr> <tr> <td>Craft</td> <td></td> <td></td> </tr> <tr> <td>Operators</td> <td></td> <td></td> </tr> <tr> <td>Elementary</td> <td></td> <td></td> </tr> <tr> <td>Armed forces</td> <td></td> <td></td> </tr> <tr> <td>Unknown</td> <td>1</td> <td>3</td> </tr> </tbody> </table> <p><b><u>Spain</u></b></p> <table border="1"> <thead> <tr> <th></th> <th>Primary</th> <th>Informal secondary</th> </tr> </thead> <tbody> <tr> <td>Managers</td> <td>1</td> <td></td> </tr> <tr> <td>Professionals</td> <td>1</td> <td>1</td> </tr> <tr> <td>Technicians</td> <td></td> <td></td> </tr> <tr> <td>Clerical</td> <td></td> <td></td> </tr> <tr> <td>Service/sales workers</td> <td>2</td> <td>1</td> </tr> <tr> <td>Agriculture</td> <td>5</td> <td></td> </tr> <tr> <td>Craft</td> <td></td> <td></td> </tr> </tbody> </table>		Primary	Informal secondary	Managers	2	1	Professionals	5	2	Technicians			Clerical			Service/sales workers		6	Agriculture			Craft			Operators			Elementary			Armed forces			Unknown	1	3		Primary	Informal secondary	Managers	1		Professionals	1	1	Technicians			Clerical			Service/sales workers	2	1	Agriculture	5		Craft			
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Operators	1												
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<p><b>Any other information</b></p>	<p><b><u>Methodology</u></b></p> <p>The requirements were captured along the methodology described in D2.1</p> <p>The overall methodological approach is at the cutting-edge of the user-centered approaches developed in the field of ambient assistive living and assistive technologies.</p> <p><b><u>Recruitment of end-users</u></b></p> <p>Part of the recruitment and inclusion process was done in Lleida via direct approach by members of the IRB Lleida team within the grounds of Hospital Universitari de Santa Maria-GSS and the contacts made by health professionals involved in the Grup en Recerca en Cures en Salut (GRECS) from IRB Lleida and HSM-GSS. In The Netherlands, ConnectedCare used its existing network of informal caregivers to identify possible participants and approach them via email.</p> <p>In Hungary, PBN recruited the participants by direct approach as well, using personal contacts and through the support of General Practitioners network and elderly homes.</p>												
<p><b><i>General considerations regarding ethical issues can be found in deliverable D2.4</i></b></p> <p><u>Informed consent</u></p> <p>To involve the end-users, all the end-users partners used the same approach all along the project. A template was provided for the notice of information and the consent form that was translated in Hungarian and Spanish.</p> <p><u>Protocols</u></p> <p>All the information regarding the protocols used to work with the end-users can be found in the deliverable D2.1 and will not be summarize here, considering their richness. Legal procedures were followed, with respect to the national ethical frameworks.</p> <p><u>Privacy</u></p> <p>As a consequence, privacy was ensured with the anonymization of all the end-users data. No medical and critical data were processed during the project.</p> <p><u>Exit strategy</u></p>													

It was clearly explained to all the participants that their participation was free and that they could stop participating at all time with no consequences, as explained to them when gathering their informed consent.

#### Incentive

No material incentive was proposed to participants. All expenses were covered (in particular, regarding their conveyance to the end-users partners offices).

#### Harms

There are no harms in participant in the use requirement phase of the AAL CoME project.

**Table 1. Interviews Evaluation Summary**

## 4. Conclusions

The interviews demonstrate that seniors have the perception of carrying out a healthy lifestyle. This perception contrasts with the perception that some informal caregivers and most of the formal caregivers, have. They stress the fact that the principal problem of the elderly is in relation with nutrition and physical activity.

The idea of having a specific tool to find reliable information about health issues to carry out a healthier lifestyle and to prevent MCI, is something that end-users assess positively. The information that they would like to find is about:

- Nutrition
- Physical activity
- Mental activities
- How to give up bad habits
- Information about blood pressure and blood sugar related to age
- How to avoid risky factors in the daily activities
- Information about the most important diseases related to age specifically in the MCI
- Avoid anxiety for the informal caregivers
- The importance of social relations
- Information about seniors mobilization
- Legal issues

Most of the seniors have some ICT knowledge and those who do not have it can be helped by informal caregivers; also, formal caregivers can have an important role teaching seniors because of the confidence that seniors have on them.

Seniors expressed some doubts about monitoring; some of them have the perception that this would be necessary when they have some important disease but not to help them to carry out a healthier lifestyle, even though they would feel more secure with this monitoring, for example, they have the perception that they could have a more rapid response in case of emergency.

The information that the platform can retrieve, through monitoring or inserted manually is:

- GPS tracking
- Information about physical activity
- Information about sleep patterns
- Information about nutrition patterns
- Blood pressure
- Blood sugar
- Heart rate

Warnings through the smartphone or wearable devices can help seniors to remember important things for them.

## 5. Annex

After the Need Analysis Phase, where PBN recruited 8 seniors 8 informal caregivers and 5 formal caregivers, the National Funding Agency indicated that this sample was smaller than the purpose of the survey would need. PBN conducted a closed survey; IRBLL and CON semi structured interviews until the data saturation.

For this purpose, PBN organized another workshop with more end-users in 2017 where the main aim was to broaden the previous sample in order to get significant results using the closed questionnaires.

As the result of this additional workshop, the final number of filled in questionnaires from Hungary are now: 20 from seniors, 20 from informal caregivers and 5 from formal caregivers.

Data regarding those 20 questionnaires filled in by seniors and 20 questionnaires filled in by informal caregivers is shown below.

Total number of end-users involved (by type of end-user, gender, etc.)

	Primary		<i>Secondary: Informal</i>		<i>Secondary: Formal</i>	
	M	F	<i>M</i>	<i>F</i>	<i>M</i>	<i>F</i>
Gender						
Number	9	11	9	11	2	3

**Table 2. Interview Summary 2**