DELIVERABLE REPORT
D9.1.3
"Field Trial and Evaluation Plan"

Collaborative project

MASELTOV
Mobile Assistance for Social Inclusion and Empowerment of Immigrants with Persuasive Learning Technologies and Social Network Services

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CONTENT

1. INTRODUCTION

The evaluation plan presented in the third iteration of this deliverable describes how the MASELTOV services will be evaluated at the various stages of the project. Early and continuous feedback is very important to avoid the development of undesired functionalities and not usable services. Especially when designing for a vulnerable target group such as immigrants who just arrived in a new country and have a different cultural background (see MASELTOV target group definition in D2.3.1). For this reason, immigrants are involved at any stage of the design process of the MASELTOV services.

This deliverable was updated twice in the course of the project. In the first version the iterative evaluation of user interfaces was explained (See D9.1.1). The second version contained the evaluation plan for the first field trials, which were realized in May and June 2014 in the cities of Graz (AT), Madrid (E) and London (UK) (See D9.1.2). The actual document represents the third version with the planning for the assessment of the final integrated prototype of the MASELTOV project. Furthermore, this document contains an updated version of Figure 1 compared to D9.1.1 and D9.1.2 showing the status within the user-centred design process in the project.

1.1 SCOPE OF THIS DELIVERABLE

This deliverable report covers the planned procedure of the final field trials of the MASELTOV services (MApp). In particular it describes the conditions of the trials in Austria and UK how users will be recruited and the different evaluations will be carried out. In contrast to the last user involving trials in the project, for the upcoming evaluation Spain will not be targeted as evaluation site. So far different cultural groups were involved in different countries, resulting in a multitude of variables to be investigated separately (i.e. 3 different host cultures and 3 different home cultures) as well as lacking of viable comparisons of experience results in relation with the usage of the MApp services. Facing economic challenges in the country with substantial impact on the situation of the involved partner FUN, changes in the constellation of the consortium somehow supported a reorientation towards a reduction of experimental conditions within the evaluation studies i.e. the neglect of Spain as a host country for non-European immigrants. However to advance research on the learning experience with using the MApp services, an additional field trial will be conducted in the town of Milton Keynes, united Kingdom.

In the final field trials which will be realized in two main parts, the participants will interact with the improved fully integrated system on a test smartphone (Motorola Moto G), with two main foci:

- Acceptance and user experience as the main focus of the main trial, planned to involve 72 immigrants for the duration of eight weeks (see Section 3.
- Language and cultural learning experience as the main focus of the MK trial, planned to involve 10 immigrants for the duration of three weeks (see Section 4.

Similar to the first field trials (T9.3), participants in this upcoming study will use the MApp services under natural, uncontrolled conditions, this time for the duration of approx. 8 weeks. Hence no explicit task-based observation will be conducted but user-generated feedback will be gathered regarding the overall handling and accordant experience with the services at the beginning (introduction workshop), during and after (closing workshop) the field phase.

This deliverable is structured as follows: sections 2 aims at giving a general overview of the principles of the user-centered design approach. Section 3 provides the overall evaluation concept including research questions and the details of the trial procedure (recruitment of the users and methodology of the concept, used methods and metrics). Section 4 provides a short summary of the expected results from this long term field trial.

2. USER-CENTRED DESIGN

In this chapter the general approach of involving users in the design process and the service development of the MASELTOV project is described.

2.1 DEFINITION AND ORIGIN

User-centred design is an approach to software development which has been evolving in the past decades. The goal of user-centred design is to make a product easy to use for its intended users which, however, might be a difficult task (Vredenburg et al. 2001). The process has emerged from traditional software development approaches to help keeping the focus on the user's needs and not to get lost in solving technical challenges first (Lowdermilk 2013). The main idea is to involve users from the start and in all stages of a software project in an iterative manner: to move from a technology-driven approach to a user-driven approach (Vredenburg et al. 2001). User-centred design is not only about understanding the users of a system but also requires an understanding of the tasks that users will perform with the system and of the environment in which the system will be used (Stone et al. 2005). This process is based on four main principles about how interactive systems should be developed as certified in the ISO standard 9241-210 (2010):

- The active involvement of users
- An appropriate allocation of function between user and system
- The iteration of design solutions
- The engagement of a multidisciplinary design team

This means to ask or observe users for their needs, to present design ideas frequently to users for their feedback and to update the design iteratively. That is, to evaluate the functional prototypes under real conditions (Petrie and Bevan 2009). The authors provide a good overview on the important concepts of human-computer interaction and user-centred design such as usability, accessibility and user experience. Based on these concepts and the aforementioned principles we set up the user-centred design process within MASELTOV as described in the upcoming section 2.1.

An important precondition for applying a user-centred design process is to know who the users of a system will be in order to involve participants as close as possible to the intended target group (Grudin and Pruitt 2002). However, the identification of users is particularly demanding if there are large numbers of heterogeneous users (Kujala and Kauppinen 2004). In the special case of MASELTOV where immigrants who form a large and very heterogeneous group in Europe shall be addressed a careful specification of the target group was very important. An additional challenge in the work with immigrants is their mistrust towards the researchers which hinders the recruitment of study participants and might influence study results (Hynes 2003). For these reasons, the target group definition needed to narrow down from the group of all possible immigrants to a subset with similar attributes but might not be too limited in order to still let NGOs gain access to members of the target group. Based on this observation the MASELTOV target group was finally defined and updated according to recommendations of the reviews (Szwochertowska et al. 2013) in the two versions of the MASELTOV deliverable D2.3 Use Cases and Service Scenarios.

When it comes to concrete user involvement in ICT projects the question how many users are needed for the current task is raised and has been discussed extensively (Nielsen 1993, Spool and Schroeder 2001, Hwang and Salvendy 2010). In user-centred design, sampling can be

based on groups that are identified by the main user characteristics (Kujala and Kauppinen 2004).

Number of testers: Influence trust and representativeness

For the elicitation of cultural-specific user requirements Aykin et al. (2006) recommended qualitative methods. Vulnerable target groups like newly arrived immigrants may be reluctant to take part in formal research studies (Atkinson & Flint 2001). Building up trust to those groups can require more than application of anonymity, confidentiality, and the use of ethical principles, for example establishing credentials by working voluntarily with a refugee community organization (Hynes 2003). Potential research participants have to have the possibilities to protect themselves in terms of their social relations with the researchers and they have to have the power to decide over whether to participate (Lammers 2005). The immigration status is very relevant regarding vulnerability and status may change (e.g. status annulment). Researchers should focus on a smaller amount of participants that are studied more intensively (e.g. observing and interviewing the concrete target group). In qualitative research, it is enough to pick up representative users from each group based on the main user characteristics which allows all necessary users to be represented (Kujala and Kauppinen 2004). Beyer and Holtzblatt (1998) recommend that between six and twenty users should be visited depending on the scope of the study. Accordingly in MASELTOV interviews and focus groups within the requirements analysis in WP2 with selected representatives of target groups were conducted (see D9.2).

Number of testers: Design evaluations

To assess the design ideas the most important aspect is to work in iterations and to present updated design frequently to users (Stone et al. 2005). Therefore a small amount of users per iteration is enough. The precise number of necessary users is difficult to define, and it depends on the case (Kujala and Kauppinen 2004). Nielsen (1993) states that the majority of usability issues of a system (around 80 %) will be identified by the first five users. However, for more complex applications up to 15 participants were needed to identify 80% of the usability issues (Spool and Schroeder 2001). Later on, Hwang and Salvendy (2010) proposed 10±2 participants for usability studies. Schmettow (2012) argues that usability studies differ so much that a "magic number" of involved users can never be defined in a reliable way. In MASELTOV sticking to usual practice and three formative evaluation iterations with 5-10 users per iteration during the design phase in the lab are conducted (T2.5 and T9.2) as experts also suggested recently (Petrie and Bevan 2009, Hwang and Salvendy (2010), Lowdermilk 2013).

For the summative testing of the working system which took place in the first field trial Petrie and Bevan (2009) suggest to involve between 8 and 30 users. In MASELTOV T9.3 studies so far, 36 users were involved (see DOW Part B Table 11) who used selected integrated services over one week. For the final field trials it is planned to include 60 to 70 users who will be asked to use the fully integrated MApp over the duration of approx. 8 weeks in their daily life.

A particularity of the user-centred design process in MASELTOV which distinguishes this project from other ICT project with vulnerable target groups is the additional external ethical approval of all user involving tasks. This means that an independent expert from the ICMPD (International Centre for Migration Policy Development) reviews all guidelines for user studies before these studies take place. More details can be found in the Ethical Manual (D1.4).

2.2 THE USER-CENTRED DESIGN PROCESS IN MASELTOV

Figure 1 presents an overview and the current status of the tasks forming the user-centred design process in MASELTOV. The user involvement was started with the requirements analysis in which specific service requirements of immigrants in order to profoundly understand their specific service needs were collected (see D2.3.1). The next step was to design the services and discuss them with immigrants. To benefit from their ideas two participatory design sessions were conducted (see D2.4). The goal of the high user involvement was to identify potential differences in design and solution approaches and to discuss them with end users. Subsequently and within the course of iterative interface design as part of WP2, in WP9 three usability evaluation studies were conducted, each at a different stage, respectively in January, May and in October 2013 (see Figure 1). Accordant results of these activities are reported in D9.2.1, D9.2.2, and D9.2.3.

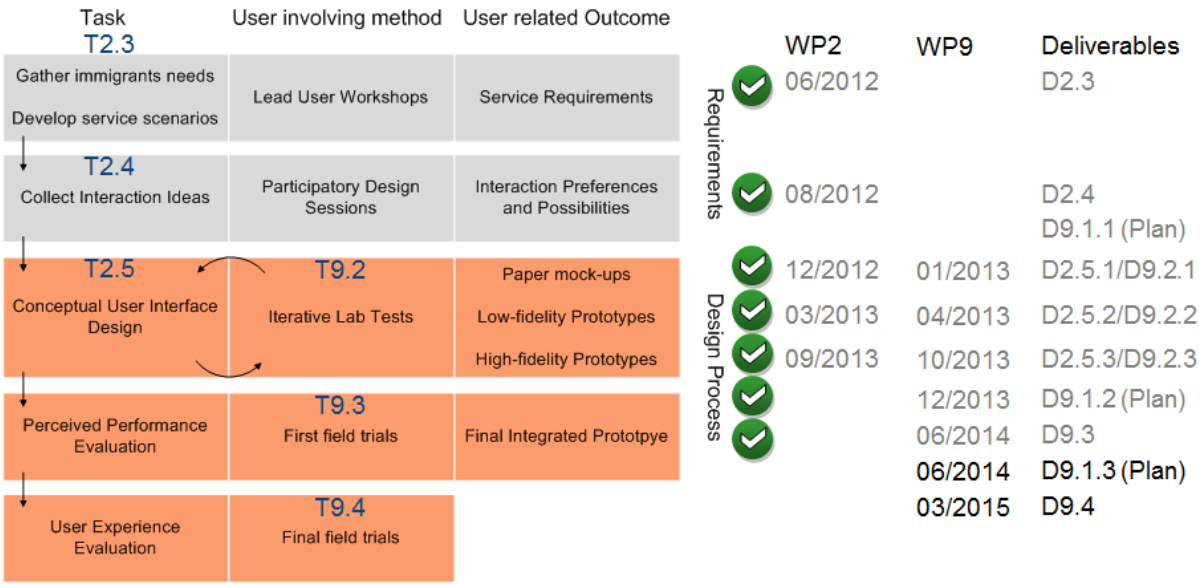

Figure 1 - Overview and status of tasks within the user-centred design process of MASELTOV.

The MASELTOV user interface was designed in an iterative manner (see T2.5) based on the outcomes of the participatory design sessions and the identified user needs. After the elaboration of the user interface concepts, the resulting mock-ups were presented first to usability experts and then to the users in form of usability tests (see T9.2). Thus, the design of the user interface could be directly linked to the iterative usability testing that took place in Task 9.2, where the interface concepts were evaluated frequently from an early stage onwards to ensure user validation. The concepts of the first iteration were visualised in a simple wireframe format. They were created rather fast and easy as necessary changes and updates were expectable after the first evaluation. As shown in Figure 1 the feedback flew directly into the next iteration step. There the concepts were refined to low-fidelity and within the third iteration to high-fidelity click-dummies. Graphics and a more sophisticated visual representation were added during this later phase of the design process when the interaction flow was specified. The high-fidelity prototypes represented the majority of the services and functions offered by MASELTOV, so that the immigrants got a real impression of how MASELTOV would work. After the creative design phase was achieved, the user interfaces

were implemented, improved and connected with the accordant services (WP6, WP7 and WP8). The several service components remained separately and thus could be evaluated individually in WP9. They were tested in the first field trials taking place in three cities (London, Madrid, Graz) of the NGOs with the accordant group of immigrants (See T9.3).

During the final iteration and revision the remaining service components are improved and then integrated into the final prototype of the MASELTOV system by beginning of autumn 2014. This final prototype shall cover all specified use cases and scenarios and thus provide service support in various situations. Between September and December 2014 the final field trials will be conducted in order to evaluate the developed MASELTOV services under real world conditions (See Task 9.4). Therefore, methods such as e.g. "Usage activity log file analysis" (e.g., Do et al., 2011) and "Experiences Sampling Methods" (e.g. Larson et al., 1983; Froehlich et al., 2007) will be applied in order to gather real time information about the usage of MASELTOV that can be analysed to determine the user experience.

3. USER EXPERIENCE EVALUATION STUDY

Usability issues and user experience aspects that have been encountered during the evaluation of selected services in a first integrated MApp version have already been reported in D9.3. This chapter describes how the final evaluation study is planned.

In the upcoming trials similar challenges as encountered in T9.3 have to be tackled again and solved (see D9.3) such as the suitability of given research methods and techniques, the language of data collection, coordination and quality of the translation processes, the matching of samples, the timing of data collection and analysis, as well as the comparability of the research process and instruments. Figure 2 illustrates the planned procedure regarding the language and translation related challenges.

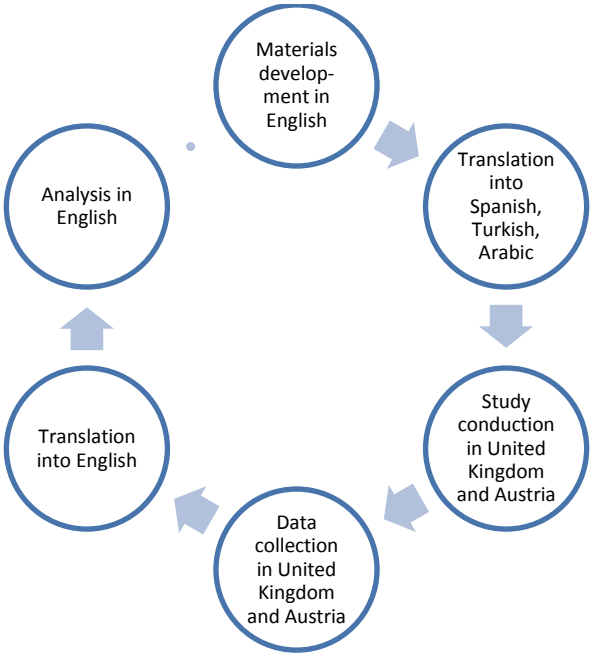

Figure 2 - Translation procedure of study materials and user- generated content.

After study materials and additional content (e.g. discussion topics in the *Forum*) are created, external translators will be employed to translate all texts into the target languages i.e. Turkish, Spanish and Arabic. All translated materials are to be reviewed by the volunteers (who primarily will act as assistance providers for users via *Help Radar* and *Forum*) and facilitators (who will monitor the overall methodological procedure and participants´ activity), who will be introduced to all materials and the procedure in order to support the study (see Table 1). Both facilitators and volunteers receive financial renumeration for their participation in the study. After participants have produced content on their subjective experience with the MApp services during the field phase as well as in the workshops, all data will be translated and analyzed by translators who preferably had involved in the previous trials. In terms of activity monitoring, there will be a regular and intensive exchange between the leading researcher and the translators to avoid loss or biasing of information important for interpretation.

To brief and support participants accurately and allow the realistic usage of the *Help Radar* and *Forum*, native Turkish, Spanish and Arabic speakers will be acquired to act as facilitators and volunteers. Table 1 shows the tasks they will be given.

Table 1 – Tasks and responsibilities of involved facilitators and volunteers.

	Facilitators	Volunteers
Introduction to MApp apps	• Learn how to use MApp services	• Learn how to use MApp services
Trial preparation	• Final check of services in target language • Training in how to support the field trial • Walk to some of the locations to support participants at using *Help Radar* • Translation of study materials (questionnaires, diary forms)	• Final check of services in target language • Training in how to support the field trial • Back-translation of study materials (questionnaires, diary forms)
Recruitment	Recruitment of participants who only speak mother tongue	-
"MASELTOV day"	Participant introduction workshop briefing and conduction	-
Field phase	Support of field trial including: • Organizing Experience Sampling Method (ESM) data collection, sending survey links via the *Forum* • Responding to posts in the *Forum* • Acting as help if somebody gets stuck and needs support using the services" • Activity monitoring	Support of field trial including: • Responding to posts in the *Forum* • Walking out to meet assistance seekers with *Help Radar* (approx. for meeting eight to ten participants) • Acting as help if somebody gets stuck and needs support using the services
Final workshop	Participants final workshop briefing and conduction	-
Analysis	• Transcription and translation of Final workshop inputs • Facilitator final feedback round	• Documentation / translation of *Forum* posts/ discussion • Volunteer final feedback round

Similar to the first field trials and to accurately evaluate the MASELTOV services in different countries involving different cultural groups in the field, the aim is to ensure:

- The validity of the gathered data from users from different countries: Based on a unified concept for the conduction of the study, materials and guidelines will be

translated into the target groups´ mother tongue in order to avoid misunderstandings and enhance the quality of the gathered data from participants. Each trial will be conducted following a structured procedure. All involved personnel will be briefed accurately by ATE in order to keep the purpose of the study in the center of interest.

- The efficient management of resources: Evaluating mobile services in different languages in multiple countries demands for careful planning and coordination efforts. According to the service language availability, selected and adapted materials will be elaborated and user interface strings will be translated.
- The respect of ethical aspects and preservation of immigrant´s security and privacy: An informative written consent will be provided to all participants in their mother tongue. During the trial participants will always be able to get support from involved support givers (i.e. facilitators, volunteers). Participants´ data are coded along to participant numbers in order to avoid traceability of personal data to specific participants.

Previous trials have shown that paper-pencil questionnaires might not be the method of choice when working with low literacy, low educated immigrants who are not familiar with any concept of written interrogation and questioning. Hence, in contrast to the first field trials, the focus of T9.4 analysis will be on the quantitative data drawn from usage activity logging, which will be collected during the field phase, enhanced by qualitative statements provided by participants, which will be collected in form of very simple and short questions. No long questionnaires and no diaries will be used (See D9.3). However, qualitative input from workshops will also be analyzed, promising substantial contribution and elaboration to the findings from logging data.

3.1 SERVICES TO EVALUATE

In T9.4 the fully integrated MASELTOV system will be evaluated with target users in the field. Often, immigrants do not speak the language of their host country. In this study the prototypes for the access to all services developed in WP 7, 8 and 9 will be tested one last time under real conditions. These final field trials should serve for the investigation of acceptance, usability and user experience aspects of long term usage of the main service components under real conditions. A special focus will be set on the evolution of different learning and user experience aspects over time. Hence, the purpose of this task is to evaluate not only the functionality of the services but also the infrastructure they are based upon which serve to fostering the empowerment and social inclusion of the immigrant target groups. Table 2 depicts the services and components, which are planned to be evaluated in T9.4. With the support of ATE and OU, the two remaining MASELTOV NGOs DAN in Austria and MRC in United Kingdom will conduct the trials in their country with relevant users in the appropriate language (See Table 2). For the trials the services will be available in the immigrants' native language.

Table 2 - Overview of location and language settings for the planned service evaluations.

Services and Modules	evaluated in (by participants)		
	United Kingdom (Latin American)	United Kingdom/ Austria (Arabic)	Austria (Turkish)
Profile	x	x	x
Translation tool	x	x	x
Help Radar	x	x	x
Forum	x		x
Navigation service	x		
Pedestrian navigation	x	x	x
Places of interest	x	x	x
Information service	x		
Language lessons	x	x	x
Game	x		x
Recommendations	x	x	x

A detailed guideline for the field evaluation will be provided by ATE. This test protocol and materials will be reviewed for ethical issues by ICMPD before the user tests take place.

In the following sections the research questions and planned methodological approaches are described in more detail.

3.2 RESEARCH QUESTIONS

With the following main research questions we will investigate the user experience, learning experience immigrants have during the interaction with the MASELTOV services over the duration of eight weeks. Table 3 depicts the list of main research questions (mapped to the planned method) which will be investigated in more depth:

Table 3. Mapping research questions to methods and data sources

Research question	Data source/ methods
1. Are there differences in the **usage activity** of immigrants with different origins in different European countries when using MASELTOV services over time?	
1.1. Which services of the system do immigrants use?	Data logging
1.2. Which services do the different immigrant groups prefer? Why? What combinations?	Closing workshop (open discussion)
2. What **user experience** do immigrants have when using MASELTOV services over time?	
2.1. How satisfied are immigrants when using the provided services over time?	ESM week 1, 4, 8 (User experience questionnaire)
2.2. Do immigrants have privacy concerns towards the use of the MApp services? If yes what are they?	Data logging (*Profile – settings*) Closing workshop (privacy questionnaire)
3. What is the impact of the **progress indicators** on usage activity provided by MApp?	
3.1. What differences in usage activity between two groups (instruction about progress vs. no instruction) occur related to the **progress indicators** provided by MApp?	Data logging (*Profile – progress*)
3.2. How useful do immigrants perceive **progress indicators** about the usage activity provided by MApp to be?	Closing workshop (open discussion)
4. To what extent does the MApp use enhance **quality of life** in terms of learning, understanding of cultural differences, and facilitate social integration of immigrants?	
4.1. [Community aspect]: To what extent does the MApp, including its community tools and services, support the participants toward social inclusion or in their learning?	Data logging (*Forum*) ESM week 2, 5
4.2. [Communication aspect]: Does the MApp help the participants develop or apply their target language?	Data logging (*Language lessons*)
4.3. [Mobility aspect]: How do mobility and context-awareness, mediated by the MApp, support social inclusion or learning?	Data logging (*Navigation, POI, AR*) Closing workshop
4.4. [New learning]: Is there evidence that use of the MApp results in a change in learning behaviours or disposition/motivation to learn?	Data logging (*Language lessons, Translation tool*) ESM week 6
5. How do immigrants use the **translation tool**?	
5.1. What are the information needs of immigrants using the translation tool?	Captured photos (Content analysis)
5.2. In what situations the translation tool is used?	Closing workshop

3.3 STUDY DESIGN

In the final field trial mixed methods will be used in order to address the exact target groups and to gather qualitative and quantitative data through self-documentation, interrogation in workshops and mobile data logging mechanisms by researchers.

3.3.1 PARTICIPANTS

The criteria for the recruitment are defined according to the adapted characteristics of the MASELTOV target groups, as follows:

a. Number of participants in total:
   - 18-24 participants with an Arabic background
   - 18-24 participants with a Latin American background
   - 18-24 participants with a Turkish background

b. Working age (i.e. between 18 and 60 years old)

c. Education level: max 8 years in school

d. Sex: equally distributed

e. 1 to 5 years of stay in the UK / Spain / Austria

f. Language skills
   - Arabic speaking participants from Arabic countries
   - Spanish speaking participants from Latin American countries
   - Turkish speaking participants from Turkey

g. Experience with using smartphones

3.3.2 METHODS

In the course of the planned long term field trial several different quantitative as well as qualitative methods and techniques will be used to answer the above formulated research questions.

Questionnaires: In a short paper-pencil pre-questionnaire participants will provide basic demographics and information about their usage habits with different mobile technologies. Additionally, after the first week of MApp service usage a user experience assessment will be conducted using the UMUX scale (Finstad, 2010).

Usage activity logs. App logs consist of the usage events of all MApp services, including system apps (Do et al., 2011). Each time the user accesses a MApp, the client software captures the event and stores it together with the timestamp. The usage duration will be considered while the analysis will also focus on usage frequency. Number and duration of MApp service accesses will be analysed to find out about the popularity of each service, as the ratio of the time spent interacting with the service and the total time spent interacting with the smartphone.

Experience Sampling Method. The Experience Sampling Method (ESM) is a method for collecting information about both the context and content of the daily life of individuals. In

the planned study a modified approach will be used to gather subjective user-feedback in the course of the field phase. Users will receive notifications on their test device (Motorola Moto G), and follow a link to answer 3 to 5 very short questions about e.g. their location or mood. Triggers of notifications will be done either time- or event-based (Larson et al., 1983).

Content analysis. The qualitative feedback which will be provided by users during the workshops will be content analysed (by involving different coders) in order to deepen and accomplish findings from quantitative data (e.g. Mayring et al., 2003).

3.3.3 PROCEDURE

Introduction Workshops

An introduction workshop will be held in each target city (London, Graz) at the NGOs facilities. Recruited participants will be asked to appear at a specific time to get briefed on the study and the MApp services.

Workshops will be held in the mother tongue of the participants.

- in Spanish for the Latin-American participants
- in Arabic for the Arab participants
- in Turkish for the Turkish participants

Participants will be invited to appear at pre-defined time slots in small groups (4-6 people) in order to avoid too much crowding. Researchers and supporters will be present the whole day to present the project, the study as well as the services to all participants. Participants will fill a short questionnaire on basic demographic information and previous technology experience.

After a brief introduction to MASELTOV and the study background (10min), facilitators will hand out the test devices (Motorola Moto G). All services (system language) to be used by participants in the following field phase will be presented in their mother tongue (see Table 2). Services will be shown and their usage will be trained, starting with a guided registration process in the *Profile*. Then all services will be introduced subsequently with room for questions and answers.

After all services have been worked through a pre-questionnaire will be distributed to gather first impressions from participants.

Similar to the first field trials procedure (See D9.3), participants will be asked to anticipate their personal goals that could be achieved with the help of the MASELTOV services. To support participants in the elaboration of their personal goals or sub-goals, a list of suggested goals will be provided to them (on a paper form). Each participant should choose 2-4 goals he/she personally focuses on.

Participants will be instructed that when they receive text messages and *Forum* posts from facilitators during the field phase they should follow the instructions (e.g. follow a link in a text message and fill a short online questionnaire in the smartphone).

After final remarks on the handling of data volume and devices participants will be dismissed to use the MApp services for the upcoming 8 weeks.

Evaluation in the Field

Participants will use the MApp services between the mid of October and the mid of December 2014 in their daily life. In this period facilitators and volunteers will be available for giving support.

On a weekly base the technical partners (AIT, FLU) will provide log file data to ATE and the NGOs in order to be able to monitor user activities with MApp, and, if necessary motivating the users to interact via the developed services, e.g. by raising an interesting discussion topic in the *Forum*. Furthermore participants will receive short questions on their smartphone to give immediate and real time feedback (e.g. on their experience, mood or location). Table 4 depicts the different phases along with the study duration, methods and related measures.

Table 4. Overview on the planned ESM procedure and related design

	Timing	Method	Related measures
Phase A	Start	Introduction workshop	Pre interaction Pre questionnaire
Phase B	After 1 week	ESM Phone interview	UX Questionnaire List of problems
Phase C	After 4 weeks	ESM	UX Questionnaire Cultural awareness and learning
Phase D	After 7 weeks	ESM Preliminary log file/ESM analysis	UX Questionnaire
Phase E	After 8 weeks	ESM Closing workshop	UX Questionnaire Privacy questionnaire

Preliminary Analysis of Results

At the end of the field phase, in a preliminary analysis ATE will screen the collected log files and data from weekly questionnaires to extract first results. Subsequently usage activity of participants will be screened according to their participation in the field phase. Motivated and interested participants will be notified to participate at the final workshops.

Final Workshops

After the preliminary analysis of the field study results final workshops will be conducted with a reduced number of participants (selected on the basis of a screening of user activities from the preliminary analysis) in order to deepen and further elaborate the findings on the user experience of the MASELTOV services. In the workshops participants should be enabled to share thoughts and reflect on each other's activities.

3.3.4 EVALUATION ROADMAP

Once all components and modules have been analysed regarding their stability and functionality as well as suitable content provision, detailed guidelines for the long term trial will be elaborated by end of September 2014, before the MApp services will be distributed to

the target users within the introduction workshops to be initiated in the target cities. A detailed roadmap can be found in Table 5.

Table 5. Main trial evaluation roadmap.

Task	Time	Responsibility
Final release discussion (Plenary meeting, Prague)	Week 38	all
Final MApp release and testing	Week 38-40	all
Participant recruitment	Week 38-43	NGOs
Setup devices and materials preparation	Week 40-41	ATE, NGOs
Materials translation	Week 40	ATE, NGOs
Volunteer and facilitator setups and briefings	Week 41-42	NGOs
Introduction workshops	Week 43-44	NGOs, ATE
Intermediate interviews, tech. support	Week 45, 46	NGOs, ATE
Preliminary log file analysis	Week 49	ATE, AIT
Closing workshops	Week 50, 51	ATE, NGOs
Workshop results transcription, final log file and results analysis	Week 02-08, 2015	ATE, OU
Final reporting (D9.4)	Week 09-11, 2015	ATE, OU

4. LEARNING EXPERIENCE EVALUATION STUDY

In this chapter we outline the rationale for the Milton Keynes (MK) field trial, and describe how we plan to run it. The overall structure of the MK trial will be the same as that for the main field trial, i.e. as described in section 3. In this section we highlight the main differences, in the aims, method and timetable. We note that the plans for the MK field trial may change in response to findings from the main field trial as this will occur before the MK field trial.

The aim of the Milton Keynes field trial is to run a focused evaluation of the use of MApp Learning Services by recent immigrants in MK, with particular emphasis on language learning and cultural learning. The MK trial will also explore goal-setting, and the learning journeys users pursue or create for themselves through use of the MApp.

The fundamental research questions (RQ) we are seeking to answer are:

1. MK-RQ1: How do the participants use the tools and services provided within the MApp to improve their language and communication skills and cultural understanding?
2. MK-RQ2: Does the MApp enable participants to shift their learning practices toward more self-determined learning?

(In the 'Research Questions' section we break these basic questions down into a set of more specific research questions, and provide some examples of corresponding questions for participants).

Although the overall structure of the MK field trial will be the same as the main final field trial (Autumn 2014), there will be a different emphasis across the methods used.

The main final field trial will use a variety of methods: Questionnaires, User activity logs, Experience Sampling Method, Content analysis. In the MK field trial the variety used will be broadly similar, but with a greater emphasis of qualitative data collection, via questionnaires and interviews. This approach is justified and described in more detail in the 'Study design' subsection.

4.1 SERVICES TO EVALUATE

The services that will be available to participants in the MK field trial are listed in Table 2. This shows that all services with the exception of the *Help Radar*, *Information service* and *Navigation service* will be available. However, it is not possible to predict with certainty which of these will be evaluated, because individual participants will choose the services they consider most appropriate to meet their learning goals.

Table 6. Overview of location and language settings for the planned service evaluations.

Services and Modules	evaluated in (by participants)
	United Kingdom (Latin American)
Profile	x
Translation tool	x
Help Radar	
Forum	x
Navigation service	
Pedestrian navigation	x
Places of interest	X
Information service	
Language lessons	X
Game	X
Recommendations	X

4.2 RESEARCH QUESTIONS

In this research activity learning experience in relation with the long term use of the MApp services will be investigated in more depth, will includes establishing:

a. How the participants use the tools and services provided within the MApp to improve their language and communication skills and cultural understanding
b. Whether the MApp enables participants to shift their learning practices toward more self-determined learning

Research questions for "a" should be the same as those in the main field trial (see Section 3.2), organized around Communication, Mobility and Community inclusion. In addition, in relation to "b", the following research questions are of interest:

1. What goals do participants set for themselves and how do they use the MApp to pursue those goals? [TASKS]
2. Does use of the MApp enable participants to construct personal 'learning journeys', and what form do they take? [PLACES]
3. Who helped them learn? [SOCIAL]
4. What do participants consider they have learned when using the Mapp? [OUTCOMES, REFLECTION]
5. Over the period of the trial, have the participants shifted their perspective on how they can learn and what constitutes learning? [ADOPTION OF INCIDENTAL LEARNING]

4.3 STUDY DESIGN

In the MK field trial a mixture of methods will be used, and the methods used will be similar to those in the first main field trial. However, in the MK field trial we will focus on gathering data about the participants' perceptions of their learning experience, and their perceptions of changes in learning practices. Data about participants' perceptions will be triangulated with data about the services used by individuals and groups, and when and where they used them. We aim to acquire a rich mix of quantitative and qualitative data which will enable us to answer the research questions presented earlier.

Many studies of the effects of new learning methods make use of pre- and post- testing as a way of determining the effect of the new method. Such studies typically use a control group, i.e. a group of participants who do not use the new method, as a comparator. The performance of this control group is compared to the performance of a group using the new method to determine the effect of the new method. This type of study is typically used to determine the effectiveness of new teaching and learning methods in formal education, where the prior knowledge of the control and experimental group is known, and their educational experiences during the experiment may be broadly similar with the exception of the exposure to the new method. However, for MASELTOV this type of approach is not appropriate, because:

- Use of the MApp will be one part of the participants' everyday lives, and we will not be able to control or predict whether it is the main way that participants learn about language or culture, or merely one part of a broader approach to learning about their new place of residence. Their perceptions of what, how and why they learn will be more informative than a collection of pre and post results.
- As participants will be able to use the MApp and any other educational resources during the study, so would a control group. As we will have no control over any of the learning events that a control or study group will experience, we would be unable to isolate the effect of the MApp.
- We believe that requiring prospective participants to take a pre and post test will have a detrimental effect on the numbers of people who volunteer to participate. It could also skew the recruitment towards those who feel confident in taking tests which is not desirable as the project is aiming to target participants who are not confident learners.

Qualitative data: Collecting qualitative data will give us richer insight into the motivations and rationales of participants: why they chose to carry out an action, and their perceptions of services. The MK field trial will place a greater emphasis on collecting qualitative data than the final field trials in London and Graz are able to do. The smaller scale of the study and more limited use of MASELTOV tools will allow more in depth querying of particular services, while the main final field trials will be aiming a broader review across the whole toolset. The MK trial also has the advantage of being able to follow up on research findings from the main field trial with further in-depth interrogation of interesting and unresolved research questions in specific areas. The kind of qualitative information necessary to answer the MK research questions may be acquired through questionnaires, diaries or a combination of these.

4.3.1 PARTICIPANTS

The criteria for the recruitment are defined according to the adapted characteristics of the MASELTOV target groups, but will focus on Spanish speakers:

h. Number of participants in total:
   - 20 participants whose first language is Spanish

i. Working age (i.e. between 18 and 60 years old)

j. Education level: max 8 years in school

k. Sex: equally distributed

l. 1 to 5 years of stay in the UK

m. Language skills: Spanish speaking participants from Latin American countries

n. Some experience with using smartphones

4.3.2 METHODS

In the course of the field trial several different quantitative as well as qualitative methods and techniques will be used to answer the formulated research questions.

Questionnaires: In a short pre-questionnaire or structured interview, participants will provide basic demographics, information about their usage habits with different mobile technologies, and their language and cultural learning experiences and goals. At the end of each week of the trial a learning experience assessment will be conducted using a questionnaire. This questionnaire will be designed to prompt responses which will complement the data acquired through the Experience Sampling Method (see below), e.g. it will ask respondents to reflect on their learning experiences over the preceding week.

At the end of the trial, all participants will be invited to fill in an online questionnaire about their overall experience of learning with the MApp. (Inviting all participants to fill in this questionnaire means that both those who used the services a lot, and those who did not, will have the chance to let us know their reasons) In addition, participants who have displayed significant or interesting usage patterns will be invited to attend a focus group. Because information from participants who made little or no use of the MApp could be useful to inform future developments it may be necessary to also invite such participants to be interviewed; this will depend on the response rate to the end of trial questionnaire.

Usage activity logs. Each time the user accesses a MApp, the client software captures the event and stores it together with the timestamp. The usage data will be used to complement the qualitative data gained through the questionnaires and Experience Sampling Method.

Experience Sampling Method. The Experience Sampling Method (ESM) is a means for collecting information about both the context and content of the daily life of individuals. In the planned study a modified approach will be used to gather subjective user-feedback in the course of the field phase. Users will receive notifications on their test device (Motorola Moto G), and follow a link to answer 3 to 5 very short questions about their learning experience e.g. what have you learnt today? Triggers of notifications will be done either time- or event-based (Larson et al., 1983).

Content analysis. The qualitative feedback which will be provided by users during the workshops, and through the ESM and questionnaires will be analysed and triangulated with the data acquired through the usage activity logs.

4.3.3 PROCEDURE

Induction Workshop

An induction workshop will be held in Milton Keynes. In the workshop participants will be briefed about the study and the MApp services in the mother tongue of the participants.

Participants' basic demographic information, previous technology experience, and their language and cultural learning experiences and goals will be gathered using a questionnaire or structured interview.

After a brief introduction to MASELTOV and the study background, facilitators will hand out the test devices (Motorola Moto G). All services which could be used by participants in the following field phase will be presented in their mother tongue (see **Fehler! Verweisquelle konnte nicht gefunden werden.**). Services will be demonstrated and participants will be able to try them, starting with a guided registration process in the *Profile*. All services will be introduced subsequently with room for questions and answers.

After all services have been worked through a pre-questionnaire will be distributed to gather first impressions from participants

Similar to the first field trials procedure (See D9.3), participants will be asked to anticipate their personal goals that could be achieved with the help of the MASELTOV services. To support participants in the elaboration of their personal goals or sub-goals, a list of suggested goals will be provided to them (on a paper form). Each participant should choose 2-4 goals he/she personally focuses on.

Participants will be instructed that when they receive text messages and *Forum* posts form facilitators during the field phase they should follow the instructions (e.g. follow a link in a text message and fill a short online questionnaire in the smartphone).

After final remarks on the handling of data volume and devices participants will be dismissed to use the MApp services for the upcoming 3 weeks.

Evaluation in the Field

Participants will use the MApp services for a period of 3 weeks beginning in January 2015. Similar to T9.3 facilitators and volunteers will be available for support giving.

On a weekly basis the technical partners (AIT, FLU) will provide log file data to OU in order to be able to monitor user activities with MApp, and, if necessary motivating the users to interact via the developed services, e.g. by raising an interesting discussion topic in the *Forum*. Furthermore participants will receive short questions on their smartphone to give immediate and real time feedback (e.g. on their learning experience).

Preliminary Analysis of Results

At the end of the field phase, in a preliminary analysis the OU will screen the collected log files and data from weekly questionnaires to extract first results. Subsequently usage activity of participants will be screened according to their participation in the field phase. Some participants will be invited to the final workshops. As we also want to know why any

participants become uninterested in the MApp services, we will invite unmotivated and uninterested participants (not necessarily at the same workshop) because they may provide very valuable data for improving the services.

Final Workshops

After the preliminary analysis of the field study results final workshops will be conducted with a selected group of participants in order to deepen and further elaborate the findings on the user experience of the MASELTOV services.

4.3.4 EVALUATION ROADMAP

A roadmap for the proposed study can be found in Table 5. The dates and timings are preliminary and may change as planning proceeds. The participants will use the MApp for a period of 3 weeks

Table 7. MK trial evaluation roadmap.

Task	Time	Resp
Participant recruitment	October – December 2014	OU
Final MApp release and testing (including feedback from first main field trial)	December 2014	all
Setup devices and materials preparation	November – December 2014	OU
Materials translation	December 2014	OU
Volunteer and facilitator setups and briefings	December 2014 - January 2015	OU
Introduction workshops	15 January 2015	OU
Questionnaire delivered weekly	22 January 2015 – 5 February 2015	OU
ESM delivered on event or every few days	22 January 2015 – 5 February 2015	
Preliminary log file analysis	6-9 Fenbruary 2015	OU
Closing workshops	10 February 2015	OU
Workshop results transcription, final log file and results analysis	11 Feruary – 27 February 2015	OU
Final reporting (D9.4)	23 February -11 March 2015	OU

5. RISK MANAGEMENT

In this section the risks especially related to the final field trials will be presented and the risk management strategies will be introduced.

5.1 DAMAGE OF THE DEVICES USED IN FIELD TRIAL

MApp prototypes will be standard Android applications that do not pose any particular danger to the users' private devices. However, to avoid any claims for indemnification users will waive any rights for such claims as part of the informed consent they sign.

5.2 RISK OF FINANCIAL OR PHYSICAL HARM FOR PARTICIPANTS

Using the MApp services causes no particular risks to the participants. However, users will be advised to follow general data security.

Financially, users are required to have a data plan with sufficient data limits. They will be informed about the average data consumption of the application and will be advised that they will not be compensated for any costs arising from exceeding their data plan limits or using the system outside of Austria.

Table 8. Participant engagement procedure.

Week of inactivity	Coin status	Communication channel (done by facilitator)	Message
0		*Forum* Post/ "Coins" thread	Announcement
1	<10 / week	*Forum* Private message	Friendly reminder to use MApp more frequently
2	<10 / week	Call	Friendly reminder to use MApp more frequently
3	<10 / week	Call	Failure to complete the trial

5.3 DROP-OUT RISK AVOIDANCE

Concerning the long period of the trial the following drop-out avoidance strategy will be applied:

- **Balanced study workload:** The amount of workload required by the users during the field trials such as questionnaires or workshops will be arranged so that it will not cause frustrations and therefore dropouts.
- **Voluntariness of participation:** Participation in the final field trials is voluntary and participants can terminate anytime their participation without having to give a reason. Participants only sign up for the final trial.
- **Activity monitoring**: During the field trial participants are required to fulfil some tasks for the studies conducted. Facilitators will send weekly reminders in form short

messages to remind participants to engage in the usage of the MApp services. In case a participant does not use the services (as visible from weekly activity logs provided by AIT) following procedure will be used:

6. SUMMARY AND OUTLOOK

The evaluation plan of MASELTOV and the status of the user-centred design process that is followed within this project are documented in this deliverable. This is the third and thus last of two updates before the final field trials to be conducted in October 2014.

In this version it is described how the final evaluation of the fully integrated system in the field will be organised, building the base for the following exploitation activities in WP10. Results will shed light about the activity usage and experience aspects of the MApp system from the part of different cultural groups i.e. EU immigrants from Latin-American countries, from Arabic areas as well as from Turkey. Insights from these different groups will deepen our knowledge not only about their acceptance and usage patterns of such mobile services, but also provides implications about how the quality of life of such immigrant populations can be augmented. The outcome will reflect the MASELTOV objectives in exploring, enriching and extending significantly mobile learning opportunities for immigrants, by embedding them into social networking processes (e.g. via the *Forum*) enabled by social computing services and multisensory context awareness (i.e. recommendation service), including geo-localized services (e.g. navigation towards users' POIs). Hence, new insights will arise from motivating immigrants to practice the target language, to learn it on the spot, to engage them in social networks and from this into concrete communication in the host language. Insofar the final evaluation will close the User-centered design process followed in the MASELTOV project. The results of the final evaluation of MApp services will be documented in the final report D9.4.

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