Deliverable Number: 4.5

Deliverable Title: Prototype of tablet SMS (prototype of a tablet version of SHARE’s Sample Management System)

Work Package: 4 – Interactive tools for cross-national surveys

Deliverable type: Other

Dissemination status: Public

Submitted by:

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Date Submitted: June 2017
SERISS (Synergies for Europe’s Research Infrastructures in the Social Sciences) aims to exploit synergies, foster collaboration and develop shared standards between Europe’s social science infrastructures in order to better equip these infrastructures to play a major role in addressing Europe’s grand societal challenges and ensure that European policymaking is built on a solid base of the highest-quality socio-economic evidence.

The four year project (2015-19) is a collaboration between the three leading European Research Infrastructures in the social sciences – the European Social Survey (ESS ERIC), the Survey of Health Ageing and Retirement in Europe (SHARE ERIC) and the Consortium of European Social Science Data Archives (CESSDA AS) – and organisations representing the Generations and Gender Programme (GGP), European Values Study (EVS) and the WageIndicator Survey.

Work focuses on three key areas: Addressing key challenges for cross-national data collection, breaking down barriers between social science infrastructures and embracing the future of the social sciences.

Please cite this deliverable as: Wielen, I., Balster, E.A. (2017). Prototype of Tablet SMS Deliverable 4.5 of the SERISS project funded under the European Union’s Horizon 2020 research and innovation programme GA No: 654221. Available at: www.seriss.eu/resources/deliverables
Summary

As part of Synergies for Europe’s Research Infrastructures in the Social Sciences (SERISS) researchers on the Survey of Health, Ageing and Retirement in Europe have been working with programmers from CentERdata, University of Tilburg to develop a new tablet-based Sample Management System (tablet SMS) to replace the current server/desktop/laptop version. The main reason for this update is that the current client-server based software (originating from 2002) is outdated. Replacing it by modern web-based applications will reduce maintenance cost, will make the software easier to set up and use (and provide it as a service), will open up the use of the software on modern devices like tablets and smartphones, and finally, through designing and developing the software in a more generic way, it opens up the possibility for other cross national survey projects like ESS, EVS and GGP to use the software.

The software consists of three components: a client used by interviewers in the field to manage their workload and complete contact records on the doorstep, a questionnaire engine to conduct the interview and the server which manages the exchange of data between the survey agency and interviewers and can be used for fieldwork progress monitoring.

Key features have been implemented, including a fully functioning mobile client to collect fieldwork monitoring data, conduct interviews and an operational back-end database to store and retrieve the data collected. The prototype tablet SMS is available to view via a dedicated website hosted and maintained by CentERdata: https://seriss.centerdata.nl/seriss. All required technical testing has been done by CentERdata. The prototype is mature enough now to start some serious testing in (pilot) fieldwork. SERISS partner EVS (European Values Studies is in favour of offering this possibility to their national coordinators and their agencies for EVS wave 5. Another next step will be to test the system during the preparations for SHARE wave 8.
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1. Overview

1.1 Purpose of the tool

The Tablet SMS developed by CentERdata, University of Tilburg for the European Social Survey is designed to replace the current Sample Management System and Sample Distributor to make it possible to conduct the Survey of Health Ageing and Retirement in Europe (SHARE) on tablets. The Tablet SMS has the following goals:

- Expanding the applicability. Make the survey instrument compatible with newer windows versions and non-Windows operating systems.
- Simplify the installation process so there is no more need for initialization files for the client.
- Replace the current SFTP/FTPS data transfer protocol with https.

The software consists of three components: the client that is used by interviewers in the field to manage their workload, a questionnaire engine for conducting the interview and a centralised management system which manages the exchange of data between the survey agency and interviewers and maintains a central database which can be used for fieldwork progress monitoring.

1.2 Current status

The Tablet SMS is built upon the Fieldwork Management and Monitoring System (FMMS) developed for the European Social Survey as part of the SERISS project. This tool includes a newly developed mobile app for interviewers to use in the field on mobile devices such as tablets or smart phones to record survey contact attempts and a web-based case management system to manage the flow of data to and from the field (see https://seriss.centerdata.nl/seriss/).

Added features of the Tablet SMS implemented so far are:
- A more abstract modular design allowing different survey projects to use the same software in different ways;
- Integration of the Quest questionnaire engine (developed by CentERdata) to conduct offline interviews;
- Implementing an encryption layer for secure saving of the interview data;
- Generating a windows 7 (desktop laptop) package.

All required technical testing has been done by CentERdata. The prototype is mature enough now to start some serious testing in (pilot) fieldwork. For an impression see screenshots in appendices A. and B. SERISS partner EVS (European Values Studies) is in favour of offering this possibility to their national coordinators and their agencies for EVS wave 5. Another next step will be to test the system during the preparations for SHARE wave 8. However, further development and testing of SHARE-specific features (like the cover screen grid (developed for the existing SD/SMS under this work package), extensive data preload) and testing is required before the tool can be considered ready for implementation in the field.

1.3 This document

This document provides information on the software that has been developed for SHARE.

It can be used for developers taking over the development or maintenance of the system to learn about its architecture and design principles. We recommend to first read the section about the functional and non-functional requirements and then go to the system software architecture to get an overview of the system.
The report details the software specification including the tool’s key functionalities, intended user groups and operating environment. It also provides a high level overview of the system architecture and its inputs and outputs.

1.4 Further information

The prototype of the tablet SMS is available online at: https://seriss.centerdata.nl/seriss and can be accessed free of charge for the duration of the SERISS project.

Web-based versions of both the client and server are available to explore using dummy data pre-loaded into the system. Test login details are provided. Detailed user guides for the tool are also available.

To learn more about SHARE: http://www.share-project.org/

The current SD and SMS system that is used by SHARE and ESS Sweden: https://www.centerdata.nl/en/projects-by-centerdata/ess-sweden-panelmanagement

1.5 Definitions, Acronyms and Abbreviations

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMS</td>
<td>Sample Management System</td>
</tr>
<tr>
<td>SD</td>
<td>Sample distributor</td>
</tr>
<tr>
<td>app</td>
<td>Mobile Application for use by interviewers in the field</td>
</tr>
<tr>
<td>CCMS</td>
<td>Centralised Case Management System i.e. the FMMS central workstation (consisting out of an online portal and connected database)</td>
</tr>
<tr>
<td>FMMS</td>
<td>Fieldwork Management and Monitoring System</td>
</tr>
<tr>
<td>SHARE</td>
<td>Survey of Health, Ageing and Retirement in Europe</td>
</tr>
<tr>
<td>ESS</td>
<td>European Social Survey</td>
</tr>
<tr>
<td>CV</td>
<td>Coverscreen, questionnaire to get the household composition</td>
</tr>
<tr>
<td>IWER</td>
<td>Survey interviewer</td>
</tr>
<tr>
<td>admin</td>
<td>System administrator</td>
</tr>
</tbody>
</table>

1.6 Acknowledgements

The FMMS, which forms the basis for the Tablet SMS, was conceived as part of the EU funded FP7 project Data Service Infrastructure for the Social Sciences and Humanities (DASISH - GA No: 283846) and developed under the Horizon 2020 project Synergies for Europe’s Research Infrastructures in the Social Sciences (SERISS - GA No: 654221). The Tablet SMS was developed under the SERISS project.

The following people were involved in the development of the Tablet SMS:

- At CentERdata: Iggy van de Wielen, Mathijs van der Paauw, Edwin de vet, Eric Balster
- At SHARE ERIC (MPG): Gregor Sand
2. Software Requirements Specification

2.1 General Requirements

2.1.1 Software Perspective

A key challenge facing all social surveys is the rapid changing of the IT landscape. Laptops with windows were the standard tools to conduct interviews. Currently software agencies all over Europe are switching to netbooks, chrome books and tablets. This brings demands that software programs can be installed on any device the agencies want to use and interact with a web based server to get quick access to data updates.

The Survey of Health, Ageing and Retirement in Europe (www.share-project.org), which conducts face to face fieldwork in 27 European countries and Israel every two years, is therefore looking to replicate its current Windows-based applications in order to be future-proof when it comes to the devices on which agencies conduct interviews. The current software system (SD/SMS) used to conduct the survey is explained in Figure 1 below.

![Figure 1: Overview of the Sample Management System](image-url)
2.1.2 Software Functions

The client is intended to be used by interviewers in the field to collect contact information, get the household composition and conduct interviews. As a minimum the tablet SMS should enable interviewers to:

- Gain an overview of and manage their workload i.e. plan their workload in the field;
- Record details of the mode, time and outcome of every contact attempt made during fieldwork;
- Record interviewer observations about the neighbourhood for each household;
- Edit address and contact information;
- Make notes about households;
- Conduct the survey interview;
- Receive and transmit data to the survey agency;

The server will be used by survey agencies to manage SHARE fieldwork. The server should enable survey managers to:

- Add address information to the sample;
- Add preload information to the sample;
- Allocate households to interviewers (and reallocate households to different interviewers part way through fieldwork);
- Keep track of the progress of individual interviewers and sample units over the course of fieldwork;

An overview of all data is shown in figure 2.

![Figure 2: Data flow of Sample Management System](image-url)
2.1.3 User Roles and Characteristics

The software has two main user roles plus an administrator role with full access and user rights to enable them to support other users.

Survey interviewers will use the client to manage households allocated to them in the field, record details of contact attempts made and neighbourhood observations for all households allocated to them, conduct the survey interview and sync the data collected to the server.

Survey agency users are responsible for conducting fieldwork in a country. They will use the server to manage SHARE fieldwork, allocate households to interviewers and receive back contact and interview information from interviewers.

2.1.4 Operating Environment

The client is intended to be used on mobile devices such as tablets and laptops so that interviewers can collect contact data in real time on the doorstep. The program is compatible with survey agencies’ existing hardware, it should be possible to install the client on Windows 10 (desktop), Android or iOS (Apple) devices running the latest operating systems.

The server is a PHP based web application running on a WAMPP or LAMPP stack.

2.1.5 Design and Implementation Constraints

The following constraints to the design and implementation of the client were identified from the start of development and informed the software design:

- The client must be implementable across all countries and organisations responsible for carrying out SHARE fieldwork. This means, first, that the tool must be compatible with different mobile devices and any existing fieldwork monitoring software that agencies may use. Second, the client must be usable by organisations with different levels of technological capabilities and IT support; it should operate as a standalone system and not be reliant on existing capabilities. Third, the client must be sufficiently flexible to accommodate differences in fieldwork practices across countries, most notably it has to accommodate the both of individual named and address-based sampling frames.
- The client is designed to be used out in the field. This means that usability and reliability are priorities. It also means that an internet connection may not always be available and that it must be possible to input and retrieve data from the app offline.
- The client handles personal data and must therefore transmit and store all data securely in a way that is compatible with national and European data protection regulations.

2.1.6 User Documentation

For the client the same user guides that are developed for the FMMS app and for the CCMS server can be used as a starting point to explore the tool. These are available to download at: https://seriss.centerdata.nl.

2.1.7 Assumptions and Dependencies

The client is built upon the FMMS and has the same dependencies that is:

The client depends on the Cordova library managing the deployment on the various mobile platforms. Any decision by Cordova to not support a specific version of such mobile platform will have the consequence that the client will not work on that platform. Therefore the Windows platform 8.1 is not supported.
The server is built upon CakePHP. This is an open source framework for creating web applications. A stable PHP version is mandatory to work correctly.

2.2 External Interface Requirements and Other Non-functional Requirements

The tablet SMS requirements are in line with the requirements for the FMMS, allowing the latter to serve as the basis for the tablet SMS.

User Interfaces
A user interface has been developed for both the client and server. The user interface for both components must be intuitive to use.

The client will be used outdoors, in all weathers and in different visibility conditions (bright sunlight, after dark). Contrast will therefore be important and ideally, the interface should adapt to different light conditions.

The tablet SMS will be used in multiple countries and IWERS and survey agency personnel will not necessarily speak English. It should be possible for users to customise the language in which they use the tool.

Hardware Interfaces
The tablet SMS will support multiple mobile devices (phones and tables) if the correct software operating system (Android, IOS or Windows Universal apps) is installed and a network (cellular or Wi-Fi) is enabled.

The case management system needs to work on a server attached to the internet listening on port 443 (https) via an Apache server. The database can be on the same server or running on another server in the same network.

Software Interfaces
Survey agencies will be responsible for importing sample records into the database. Data will be imported as a .csv file. It should be possible to export summary progress records and case-level contact records (composed of data collected via the client) from the database. Data can be exported as a .csv file. Future developments may support data import and export in other formats, for example SQL.

The SMS is currently intended to operate as a standalone tool.

Communication interfaces
The SMS client needs to communicate with the case management system and allow data to be transferred to and from interviewers in the field on a regular basis i.e. at least daily. Data transfer will be via the internet using secure protocols (HTTPS). However, when interviewers are in the field they may not have access to the internet and be able to transfer data straight away so local storage on the mobile device is also necessary. Data must not be lost if an internet connection (or power) is lost during data transfer.

Other Non-functional Requirements
Performance Requirements
The SMS must be capable of handling a large amount of data. Each round of SHARE fieldwork involves collecting contact and interview data for around 200,000 sample units (households) with multiple contact attempts (an average of 2-5, but sometimes 10+) and data, meta data and para data from interviews of around 100,000 respondents to be logged for each wave.
Multiple users will need to access the system simultaneously. If rolled out across SHARE the FMMS must be able to support data collection in 28 countries. The client will be used throughout the day by multiple users in each country.

Response times are important, especially within the client, which the interviewer will be using to collect data from respondents in real time. Response times for the client should be no more than 2-3 seconds.

**Safety Requirements**

Data entered into the SMS needs to be retained during and beyond the survey’s fieldwork period. The central database must be backed up regularly to minimise the risk that any contact data collected is not lost accidentally.

Data will be stored within the tablet SMS and synchronized with the national server case management system. Each week an export of all agreed upon data, meta data and para data will be send to CentERdata for central data processing and fieldwork statistics. All transferred data will be backed up daily by CentERdata’s ISO 9001 and ISO 27001 certified hosting partner, using a round robin backup strategy (with a daily frequency and a one-week cycle). A separate daily backup will also be carried out on a different server (hosted by the same organization and located within the Netherlands) as an additional safeguard against server failure or other technical problems.

**Security Requirements**

The SMS will be handling personal data and so data security is of paramount importance. The tool must treat data in accordance with EU data protection requirements (currently General Directive 95/46/EC, to be replaced by the European Data Protection Regulation from May 2018). Where national data protection regulations in individual countries impose requirements over and above those imposed by EU regulations, the more stringent requirements should also be adhered to.

As a minimum, access to both the client and case management system should be via secure login, data should be encrypted with decryption possible only on supply of known communication keys, and all data transfer should be via HTTPS. Differential access rights for different user groups will be necessary to ensure that access to personal data is kept to a minimum.

Data stored on mobile devices should not be accessible by unauthorised use. Each time the client is opened a login screen should appear to authenticate the user and the app should lock after a short amount of time left inactive. The data should not be accessible via other applications on the same device.

Data within the case management system needs to be stored on a virtual private server, hosted at the national agency or by CentERdata’s ISO 9001 and ISO 27001 certified hosting partner based in the Netherlands (and so subject to Dutch data protection legislation). The server and associated data security procedures are in line with Certified Information Systems Security Professional (CISSP) guidelines.

Data will only be retained within the system for the current fieldwork round. It must be possible for the system to be emptied at the end of each round of fieldwork. To comply with the “right to be forgotten” it must also be possible for data collected for individual sample units to be deleted during fieldwork if requested.

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3. Usability Specification

The following scenarios were developed to illustrate ways in which the tablet SMS might be used. They build on the use cases developed for the FMMS whilst incorporating some of the additional functionalities such as being able to conduct the survey interview in the tool.

Scenario 1: At the start of fieldwork, a survey agency (SA) user successfully installs the server where is specified the sample type and survey contact scheme and uploads to the server a) sample records b) details of the interviewers assigned to work on SHARE. The server syncs with IWERS devices so that IWERS receive their workload upon logging into the app and are ready to start making contact attempts.

<table>
<thead>
<tr>
<th>User(s) involved</th>
<th>SA</th>
<th>IWER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preconditions</td>
<td>Program is installed on the server</td>
<td>IWER has internet access</td>
</tr>
<tr>
<td>Use cases</td>
<td>- SA runs the setup&lt;br&gt;- SA logs in securely to the server&lt;br&gt;- SA specifies for the log a visit, neighbourhood, household selection and questionnaire which quest definition is used,&lt;br&gt;- SA imports interviewer records for interviewers assigned to work on SHARE&lt;br&gt;- SA imports sample records with address information&lt;br&gt;- The SA is able to manually allocate households to interviewers&lt;br&gt;- IWERS logs in securely to the client&lt;br&gt;- The app syncs with the server and the IWER picks up new households allocated to them</td>
<td></td>
</tr>
</tbody>
</table>

Scenario 2: An IWER issued with a sample of addresses plans their workload for the day, deciding to visit address x. He makes contact with someone at the target address, performs respondent selection (1 household, 2 residents 50+) and finds that the selected respondent is not at home. The IWER makes a note to call back on Thursday.

<table>
<thead>
<tr>
<th>User(s) involved</th>
<th>IWER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preconditions</td>
<td>User accounts set up&lt;br&gt;Details of the survey agency and sample type input to the server by administrator&lt;br&gt;SA has imported sample data into the server and allocated households to interviewer&lt;br&gt;IWER has internet access</td>
</tr>
<tr>
<td>Use cases</td>
<td>- IWER logs in securely to the client&lt;br&gt;- IWER browses the list of households allocated to them&lt;br&gt;- IWER searches for a specific household&lt;br&gt;- IWER logs a contact attempt at the address&lt;br&gt;- Log date, time and mode of visit&lt;br&gt;- Record an appointment</td>
</tr>
</tbody>
</table>
Scenario 3: A (male) IWER makes a call at an address, makes contact with the named respondent who refuses to take part. The IWER logs the necessary information about the contact attempt including reason for refusal, estimated likelihood of participation) and records neighbourhood observations about the address. He then requests that the household be reallocated, making a note that it should be reallocated to a female IWER. The survey agency receives the request and reallocates household to another (female) IWER who, on their first visit, manages to conduct an interview.

User(s) involved

<table>
<thead>
<tr>
<th>SA</th>
</tr>
</thead>
<tbody>
<tr>
<td>IWER 1 and IWER 2</td>
</tr>
</tbody>
</table>

Preconditions

User accounts set up
Details of the survey agency and sample type input to the server by administrator
SA has imported sample data into the server and allocated households to interviewer
IWER has internet access

Use cases

| IWER1 logs in securely to the client |
| IWER1 log a contact attempt, recording a refusal and completing the necessary follow up questions |
| IWER1 requests that the household be reallocated to another IWER |
| IWER1 makes a note about the reallocation request |
| SA manually reallocates the household to IWER2 |
| IWER2 logs in securely to the client |
| IWER2 conducts the interview |

Scenario 4: An IWER issued with a sample of named individuals calls at an address and makes contact with someone who is not the respondent. That person tells the IWER that the named respondent has moved just round the corner (still within the IWER’s area) and gives the IWER the new address. The IWER changes the address information within the app and goes to make a contact attempt at the new address. There is no contact with anyone. The IWER completes the neighbourhood observations for the new address.
<table>
<thead>
<tr>
<th>User(s) involved</th>
<th>IWER</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Preconditions</strong></td>
<td>User accounts set up</td>
</tr>
<tr>
<td></td>
<td>Details of the survey agency and sample type input to the server by administrator</td>
</tr>
<tr>
<td></td>
<td>SA has imported sample data into the server and allocated households to interviewer</td>
</tr>
<tr>
<td></td>
<td>IWER has internet access</td>
</tr>
<tr>
<td><strong>Use cases</strong></td>
<td>IWER logs in securely to the app</td>
</tr>
<tr>
<td></td>
<td>IWER records change of household address in the app</td>
</tr>
<tr>
<td></td>
<td>IWER logs a contact attempt (no contact with anyone)</td>
</tr>
<tr>
<td></td>
<td>IWER completes neighbourhood observations</td>
</tr>
<tr>
<td></td>
<td>IWER manually syncs client with server</td>
</tr>
</tbody>
</table>

**Scenario 5:** An IWER issued with a sample of named individuals calls at an address and makes contact with the respondent. That person tells the IWER that he is willing to do the interview

<table>
<thead>
<tr>
<th>User(s) involved</th>
<th>IWER</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Preconditions</strong></td>
<td>User accounts set up</td>
</tr>
<tr>
<td></td>
<td>Details of the survey agency and sample type input to the server by administrator</td>
</tr>
<tr>
<td></td>
<td>SA has imported sample data into the server and allocated households to interviewer</td>
</tr>
<tr>
<td></td>
<td>IWER has internet access</td>
</tr>
<tr>
<td><strong>Use cases</strong></td>
<td>IWER logs in securely to the app</td>
</tr>
<tr>
<td></td>
<td>IWER conducts the interview</td>
</tr>
<tr>
<td></td>
<td>IWER manually syncs client with server</td>
</tr>
</tbody>
</table>
4. System Architecture and Design

4.1 Introduction

4.1.1 System Overview

The system will have a client server architecture where the clients on a pc use a web browser to interact with the application. For the mobile devices a native app is developed which will connect to the same application for downloading and uploading data.

4.1.2 Design Constraints

The design constrain used for developing the software are:
- Import and export of data should happen via a known format useable by different software tools
- The webserver used is limited to Apache
- Database support is limited to MySQL
- The graphical user interface is created via html with the help of the HTML,CSS and Javascript framework Bootstrap
- The PHP and CakePHP guidelines for development are followed.
- Security and Anonymize measures should be implemented application wide and not for each functionality.

4.2 System Architecture

4.2.1 System Hardware Architecture

The current hardware architecture is partitioned in 3 main servers with the following specifications
1. Apache web server
2. Two MySql database servers

The apache web server host the main system interface. It handles the different data downloading and uploading via https

The MySql database servers store the data provided by the web server. One MySql server is the master server where all data is insert. The second MySQL server is used as a fall over mechanism for the master server and is used as read server for load balancing

A typical overview of the LAMP stack is shown in figure 3.
4.2.2 System Software Architecture

Both the client and server use a Model View Controller architecture so the application can be more easily maintained. A typical MVC architecture is shown in figure 4.

Figure 3: Hardware Architecture

Figure 4: MVC architecture

The server is programmed in PHP with the help of the CakePHP framework. The client is programmed in JavaScript with the help of AngularJS, Bootstrap and Cordova for deployment on mobile devices.
4.3 File and Database Design

4.3.1 Database Management System Files

The entities used in the system are:

<table>
<thead>
<tr>
<th>Entity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address</td>
<td>Address information for a certain household</td>
</tr>
<tr>
<td>Household</td>
<td>Unique household who needs to be contacted</td>
</tr>
<tr>
<td>ContactOutcome</td>
<td>All codes that can be specified during a contact attempt</td>
</tr>
<tr>
<td>Resultcode</td>
<td></td>
</tr>
<tr>
<td>Country</td>
<td>List of countries known in the system and used for organizations and samples</td>
</tr>
<tr>
<td>Fieldwork</td>
<td>To specify which round we are administering for a certain country</td>
</tr>
<tr>
<td>Notes</td>
<td>Messages logged with a connect attempt</td>
</tr>
<tr>
<td>Preloaddata</td>
<td>Preload information for the interview provided by SHARE central</td>
</tr>
<tr>
<td>Respondent</td>
<td>Person who is interviewed</td>
</tr>
<tr>
<td>Relation</td>
<td>Information on the relation between respondents</td>
</tr>
<tr>
<td>Replicate</td>
<td>Batch information for the sample</td>
</tr>
<tr>
<td>Role</td>
<td>Specify different roles within the system to use with the Access Control list</td>
</tr>
<tr>
<td>User</td>
<td>Table to identify user in the system</td>
</tr>
</tbody>
</table>
The relations between these entities are shown in the Entity Relationship Diagram.

Figure 6: Entity Relationship Diagram

4.3.2 Non-Database Management System Files

The server use the following files for input:

<table>
<thead>
<tr>
<th>File</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interviewer import</td>
<td>Import file for importing multiple interviewers at once including personal and login information</td>
</tr>
<tr>
<td>Sample import</td>
<td>Import file for importing the sample of a round into the system holding all respondents that needs to be interviewed and their household members</td>
</tr>
<tr>
<td>Preload import</td>
<td>Import all preload information for the interview</td>
</tr>
<tr>
<td>Contact import</td>
<td>Import contact attempts not made by the interviewer but by for example an phone studio</td>
</tr>
</tbody>
</table>
The server use the following files for output:

<table>
<thead>
<tr>
<th>File</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statistics export</td>
<td>Export the current state of fieldwork which summarizes all households and respondents to their current final state for example interview, refusal not contacted etc.</td>
</tr>
<tr>
<td>Sample export</td>
<td>Export all information of the current sample it list all households including their respondents, contact attempts etc.</td>
</tr>
<tr>
<td>Interviewer export</td>
<td>Export all interview date grouped together</td>
</tr>
</tbody>
</table>

5. Software Testing

Reflecting the fact that the table SMS prototype was based on the FMMS developed for ESS, the prototype has mainly been tested to date on cross-sectional individual surveys, namely the ESS and the European Values Study. In house testing has been carried out by researchers on both studies. Field tests of the tool are planned as part of the ESS Round 9 two-nation pilot and as part of mainstage fieldwork for EVS 2017 where the tablet will be made available to countries wishing to use it on a voluntary basis. This testing is planned to take place in late 2017. Another next step will be to test the system with a household panel study during the preparations for SHARE wave 8.

6. Version Description

The current version is publically available at [https://seriss.centerdata.nl](https://seriss.centerdata.nl). The tool is provided for illustration and exploration purposes; it is not yet field-ready. Anyone interested in finding out more about the tool and its possible application in the field can contact CentERdata via centerdata@uvt.nl.

6.1 Inventory of Materials Released

The following software is available for exploration:

- A web-based version of the client app that works in Chrome or Safari.
- An Android version of the app that works with Android Kitkat (4.4) or higher.
- A Windows 7 version of the app.

The final field-ready release of the tool will also include an IOS version of the app.

6.2 Installation Instructions

The web-based version of the client can be accessed via Chrome or Safari web browsers. No installation or special settings are required.

To install the Windows or Android versions of the app on a mobile device use the following instructions:

6.2.1 Windows 7

First download the installer and execute setup.exe.

6.2.2 Android
For android it highly depends from which manufacture your phone/tablet is. The procedure for an Android stock device is given and for most times manufactures follow similar procedures.

Go to the settings of your device and choose “Security” then enable “Unkown sources” which let you install apps from sources other than the google play store. Now you can download the apk file from https://seriss.centerdata.nl/

For testing/experiencing the tablet SMS no server installation is required. It is a web-based tool located on a secure cloud-based server hosted and maintained by CentERdata in the Netherlands. To access the tool all users require is a reliable internet connection and an up to date browser using HTML5 protocols.

Dummy interviewer and sample data are available on the website.

The prototype operates on a secure server and the transfer of all information between the client and server is carried out using secure HTTPs protocols. However, the prototype has not undergone full security testing. Therefore, the prototype should only be used with the dummy data provided.

6.3 Known omissions

There are no known errors in the prototype software. However, note that:
- The IOS version of the app has not been made available on the prototype website (IOS apps can only be made available through Apple stores);
- The server is currently available in English only but translations are done for Dutch, Italian, Russian and Swedish.
Appendix 1: Tablet SMS screenshots

A.1 login screen

A.2 Household list
A.3 household detail view

A.4 screening a household
A.5 Conducting the interview
A.5 syncing with the server
Appendix B Case Management Server screenshots

B.1 case list

B.3 Overview of questionnaires that will be downloaded the tablet SMS
B.3 Interviewer list

<table>
<thead>
<tr>
<th>Interviewer ID</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>10001</td>
<td></td>
</tr>
<tr>
<td>10002</td>
<td></td>
</tr>
<tr>
<td>10003</td>
<td></td>
</tr>
<tr>
<td>10004</td>
<td></td>
</tr>
<tr>
<td>10005</td>
<td></td>
</tr>
<tr>
<td>10006</td>
<td></td>
</tr>
<tr>
<td>10007</td>
<td></td>
</tr>
<tr>
<td>10008</td>
<td></td>
</tr>
<tr>
<td>10009</td>
<td></td>
</tr>
<tr>
<td>10010</td>
<td></td>
</tr>
<tr>
<td>10011</td>
<td></td>
</tr>
<tr>
<td>10012</td>
<td></td>
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<tr>
<td>10013</td>
<td></td>
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<tr>
<td>10014</td>
<td></td>
</tr>
<tr>
<td>10015</td>
<td></td>
</tr>
<tr>
<td>10016</td>
<td></td>
</tr>
<tr>
<td>10017</td>
<td></td>
</tr>
<tr>
<td>10018</td>
<td></td>
</tr>
</tbody>
</table>

B3. Case detail overview

**Case 100001**

- **Phones**: 
- **Email**: 
- **Address**: 15 Fitzgerald Avenue LONDON LN10NC
- **Last outcome**: Case list loaded yet.
- **Times visited**: 0
- **Interviewer**: 
- **Respondents**: 
  - **Lastname**: 
  - **Firstname**: 
  - **Date of birth**: 
  - **Age**: 
  - **Gender**:

There are no notes for this case. You can add a note using the form below.
B.4 Fieldwork progress and statistics

<table>
<thead>
<tr>
<th>Summary indicators</th>
<th>Value</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>group_sample</td>
<td>5000</td>
<td>100%</td>
</tr>
<tr>
<td>Cases in field</td>
<td>2000</td>
<td>57%</td>
</tr>
<tr>
<td>eligible</td>
<td>5000</td>
<td>100%</td>
</tr>
<tr>
<td>Response rate</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Contact attempted</td>
<td>3</td>
<td>0%</td>
</tr>
<tr>
<td>Non-contacts</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Cooperation rate</td>
<td>1</td>
<td>33%</td>
</tr>
<tr>
<td>N of interviewists active in past</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>N of interviewists achieving an</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>interview in panel week</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>