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Acknowledgement:
This is a joint report of the ESSnet DCSS project members. For an overview of everyone involved in the project please refer to Annex 8.5
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1. Final Publishable Summary Report

1.1 Background

Eurostat has initiated the ESSnet project “Data Collection in Social Surveys Using Multiple Modes” (DCSS) with the aim to support Member States in their early efforts to develop and to implement web questionnaires in a mixed-mode data collection environment. With this project, Eurostat wants to encourage National Statistical Institutes (NSIs) to exchange knowledge and experiences. The project considers matters of new data collection modes and data quality as particular relevant with regard to issues of harmonisation and standardisation in the ESS. The overall goal of this project is to promote the efficient development of web questionnaires for social surveys in the ESS within the already existing mixed mode data collection systems in social surveys. This project thus covers a range of complex issues, such as the design of good web questionnaires for social surveys, strategies for organisation of mixed mode data collection and the measurement of and adjustment for mode effects. At the end of the project, it is now important that findings on these issues are disseminated within the ESS to stimulate an on-going exchange on the topics of web and mixed mode data collection in social surveys.

Developing Web Questionnaires for Social Statistics

Computer-assisted web interviewing (CAWI) in official statistics is constantly and controversially discussed within the ESS: Web-based data collection seems to hold a high potential in terms of cost-efficiency. Once implemented it is expected to be cheaper than traditional ways of data collection, both regarding the fieldwork as well as the data processing. Additionally, web data collection is a promising approach to counteract decreasing response rates because it is a way to meet the demands of users (e.g. younger respondents) who might prefer to participate in surveys independently from personal visits and time constraints associated with interviewer-led modes. Whilst the application of web-based modes of data collection is quite common for business surveys, the development of web for social surveys in the ESS is only at the beginning. This task is demanding since relatively little is known about the requirements of web questionnaires for social surveys in official statistics. It is important to be aware of the fact that any web questionnaire that will be developed for social surveys today not only has to fit into the existing data collection environment of the NSI but it also has to meet future user needs, for example, the increasing demand to be able to complete web questionnaires on tablets and to a lesser extent also on smart phones.2

1 Please note: All deliverables are available on http://www.cros-portal.eu/content/data-collection
Mixed Mode Data Collection

With the addition of web questionnaires into the mode mix of social surveys, the debate on the impact of mixed-mode data collection on data quality has received new momentum. Mixed mode data collection was previously considered a methodological issue discussed rather isolated in each NSI. With the awareness that the mode of data collection has an impact on quality and comparability of data, NSIs seek for solutions in the European exchange of best practices and experiences. The ESSnet DCSS project has aimed at facilitating and enhancing this process. For the foreseeable future, mixed mode data collection will increasingly be the norm in social surveys. It is therefore advisable to conduct joint research on this subject.

For the moment, web questionnaires are still rarely used in population surveys in official statistics but the near future will see the addition of web to mixed mode designs in social statistics in a number of European countries. 14 out of 24 statistical offices state in 2013 that they have concrete plans to add web in social surveys within the following five years (see Deliverable D2_2 on http://www.cros-portal.eu/content/data-collection). The implementation of this change in data collection will pose a number of challenges to statistical offices.

The Labour Force Survey (LFS)

This ESSnet project takes the Labour Force Survey (LFS) as example to test the introduction of web questionnaires for social surveys. With reference to the LFS, the ESS faces a situation that data collection is usually conducted using several modes. These modes and their combinations differ a lot between Member States. As stated by the Working Group Labour Market Statistics (LAMAS) in December 2011 (Doc. Eurostat/F2/LAMAS/38/11), most of the NSIs adopted computer-assisted (CA) data collection modes for the LFS but only two countries apply a web questionnaire for the regular data collection so far (the Netherlands and Denmark). Several countries, however, made considerable progress in the development of an adequate web tool, others are recognising the need for CAWI as part of their mixed mode data collection strategy and started projects exploring the possibilities of using web-based data collection for social surveys in general.

Modernisation of Social Statistics

The ESSnet DCSS project is of relevance beyond the LFS. It should be seen in the context of the entire modernisation efforts in the system of social statistics in the ESS. The project addresses a number of important objectives set out in the “Wiesbaden Memorandum” endorsed by the conference of the Directors-General of the National Statistical Institutes (DGINS) held in September 2011. It will provide a sound methodological background on data collection modes in order to maintain high quality standards while allowing efficiency gains. Thus, it will contribute to a common European architecture for social statistics, and help in achieving a higher degree of standardisation in the implementation of social surveys in the ESS.
1.2 Structure and Objectives of the Project

Consortium

The Consortium consists of five Statistical Offices (NSIs): the Netherlands, Norway, United Kingdom, Finland and Germany. These partners perform the main tasks and research. Three additional NSIs act as support group members: Denmark, Sweden and Italy. Within the Consortium, Destatis (Germany) is the overall co-ordinator and project leader of the work package on web data collection. CBS (Netherlands) lead the work package on multi-mode data collection design.

Structure of the consortium

Coordinator:
- Federal Statistical Office Germany (Destatis)

Partners:
- Statistics Netherlands (CBS)
- United Kingdom Office for National Statistics (ONS)
- Statistics Finland (Stat. Fin.)
- Statistics Norway (SSB)
- Federal Statistical Office Germany (Destatis)

Tasks: Carrying out specific tasks according to the contract of the ESSnet DCSS

Support-group members:
- Statistics Sweden (SCB)
- Statistics Italy (ISTAT)
- Statistics Denmark (DST)

Task: Representation of other NSIs in the ESS that cannot be part of the ESSnet DCSS

Sub-contractors:
- Peter Lynn, University of Essex
- Dirkjan Beukenhorst (formerly at CBS)

Task: Providing advice to the ESSnet DCSS as academic and senior researchers
Work packages

There are four work packages, two of which cover the management (WP I) and the dissemination (WP IV) of the project. WP II and WP III deal with the substantial work of the project.

WP I: Management
WP II: Web data collection
WP III: Multi mode data collection design
WP IV: Dissemination

WP I Management

As project coordinator, Destatis is responsible for WP I, that means for coordinating, structuring and monitoring the tasks carried out by the consortium in work packages II, III and IV. This means, the organisation of meetings, telephone conferences, preparing agendas and minutes, the communication with partners and with Eurostat, the participation at conferences representing the project and all administrative tasks with regard to the budget, travel and invoices have been in the responsibility of Destatis. Finally, Destatis created the web page at [http://www.cros-portal.eu/content/data-collection](http://www.cros-portal.eu/content/data-collection) and wrote and compiled the intermediary and the final report of the ESSnet DCSS.

WP II Web Data Collection

Starting point of this work package, coordinated by Destatis, was a query which was conducted in collaboration with WP III among NSIs in Europe and beyond about web and mixed mode data collection in social surveys. What is the status quo? Which experiences have NSIs made? And which plans do NSIs have for the future with regard to the extended introduction of web and mixed mode data collection? The results were published in the report “Query on Data Collection for Social Surveys”.

In the course of the project, the five partner countries have started developing web questionnaires of the Labour Force Survey. All countries used qualitative pretest methods, predominantly cognitive interviewing, in order to test their electronic questionnaires. Some countries carried out additional quantitative pilot studies. The Netherlands have already included web as part of their LFS mixed mode design since 2012 and have gathered a range of interesting data from the experience of conducting CAWI in the field.

Testing was conducted with regard to the functionality (Do the features of the web questionnaire work?) and the usability of the web questionnaires (Do respondents understand and make effective use of the functionalities?). Another important focus was on the comprehension of specific concepts in the LFS questionnaire, that is, particular questions that might be difficult to answer for the respondents of the web questionnaires. Additionally, also IT-related topics were addressed, in particular the use of mobile devices to complete web question-
naires but also the questionnaire display in different browsers and for varying screen resolutions.

Seven deliverables are available: The query report, five national pretest reports and the summary report of WP II. The latter report compiles recommendations on a range of relevant issues in web questionnaire design, which might be particularly helpful for NSIs that are relatively new to the challenge of web questionnaire design for social surveys.³

**WP III: Multi mode data collection design**

CBS Netherlands coordinated this work package in which all five partners carried out specific tasks based on their respective expertise. Work package III dealt with mixed mode data collection, specifically with a view on the combination of web (CAWI) with other modes (CAPI, CATI, and / or paper). The focus was on mixed mode designs within one fieldwork period and one wave, although attention was also given to the use of web as a mode for the second wave of the LFS. There were three sub-tasks:

1. the organisation of mixed mode data collection
2. measurement of mode effects
3. estimation and adjustment for mode effects

Sub-task (1) on the organisation of mixed mode data collection is about mode strategies: which modes in which sequence, the timing of mode switches in view of the reference week, response rates and the measures to heighten web response. Important findings furthermore relate to the question: Who are the web respondents in terms of demographics compared to the respondents in other modes? Attention is also given to the important subject of case management systems, the software systems that are able to support all modes and allow flexible transitions from one mode to another. Sub-task (2) is on mode effects, the phenomenon that substantive findings of surveys may be different as a result of differences in mode specific coverage, response and measurement errors. Finally, sub-task (3) deals with estimation and adjustment: Given that there are mode effects, can we adjust for them, and how exactly should this be done?

As in WP II, the work started by conducting the query on “Data Collection for Social Surveys”. The findings supplemented the knowledge about experiences with web and mixed mode data collection among NSIs. The query included questions about the timing of mode switches, response rates, organisation of mixed mode, mode effects and adjustment for mode effects.

³ All deliverables can be downloaded in the Cros-Portal at [http://www.cros-portal.eu/content/data-collection](http://www.cros-portal.eu/content/data-collection)
The work resulted in eight major deliverables: The query report on Data Collection in Social Surveys, a report on organisation of mixed mode data collection and case-management, three reports on mode effects in mixed mode data collection, two reports on adjustment and weighting and the summary WP III report.⁴

**WP IV Dissemination**

Many countries consider or plan the introduction of web data collection in social surveys in the near future. While national circumstances in each country are unique, many challenges faced by NSIs are similar. A comprehensive exchange of knowledge, experiences and best practices among NSIs is therefore very helpful for countries planning to introduce or increasingly rely on multiple mode and web data collection. Three sub-tasks were defined and implement with the aim of realising good dissemination of the project activities. First, all outputs of the project are to be published on the cros-portal website. The second sub-task was to present the project objectives and outputs at relevant academic conferences and workshops of official statisticians. The Working Group LAMAS⁵ has been informed during the entire running time of the project. At the beginning, the UNECE seminar on “New Frontiers for Statistical Data Collection” was informed about the project. A total of more than 20 presentations were given at international conferences to disseminate the project objectives and preliminary results. And the third sub-task was to organise a public workshop on the topic of multiple mode and web data collection towards the end of the project. 95 participants from 26 countries attended the two-day workshop in which partners of the project, other NSIs and researchers from academia presented and discussed their research findings on web and mixed mode data collection. Dissemination efforts were organised in WP IV, coordinated and predominantly executed by Destatis.

### 1.3 Main Results

#### 1.3.1 Query on ‘Data Collection in Social Surveys’

Within the scope of WP II and WP III, a survey was conducted among NSIs on data collection strategies in social surveys with particular emphasis on the Labour Force Survey (LFS). The field phase was between March and May 2013. The main topics included a) an overview of applied data collection designs in social surveys, b) a specification of the implemented mixed-mode data collection, c) main features of web questionnaire design, d) software packages used in the NSI-specific IT-environment and e) future prospects with regard to web data collection.

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⁴ All deliverables can be downloaded in the Cros-Portal at [http://www.cros-portal.eu/content/data-collection](http://www.cros-portal.eu/content/data-collection)

⁵ see Annex D4_6
All ESS countries as well as several overseas countries were invited to participate. Multiple reminders helped to raise the overall response rate to almost 85% (data on core variables are available for 95% of the invited NSIs).

The main findings include:

- Mixed-mode data collection for the LFS is already practiced in the majority of ESS countries. However, fewer than a third of the countries neither conduct mixed-mode data collection nor apply web questionnaires.

- The applied mixed-mode data collection strategies are rather divers; mixed-mode is more common in the follow-up of waves, rather than in first waves.

- For the first wave of the LFS, CAPI is the major mode, whereas in the second wave, CATI becomes more relevant. Beyond that, there is an enormous diversity between the NSIs (e.g. between Eastern and Western countries), using different modes within one wave and between waves.

- Currently, only two countries use a web questionnaire for the LFS in statistical production (NL and DK); six countries are in the phase of testing a web questionnaire for LFS.

- Web questionnaires are relatively common in the Census (13 countries), compared to all other social surveys.

- More than one-third of ESS countries in the query said they plan to implement CAWI for social surveys within the following five years.

- The main reason for NSIs to use mixed mode data collection: it is considered cost-effective and respondent-friendly.

- With reference to the LFS, the implementation of a reference week is widely recognised as being an issue. The use of web questionnaires may require additional time for the data collection phase. Several countries clarified that solutions recommended as a result of the ESSnet must be in line with the provisions of EU regulations (even distribution of interviews over the calendar year).

- NSIs view future cooperation and assistance within the ESS on the topics of web and mixed mode data collection as very important: Particularly popular were the suggestions to offer training courses for staff members of NSIs on how to design web questionnaires, followed by creating a handbook on recommended design for web questionnaires.

1.3.2 WP II: Web data collection

While CAWI has become a common mode for business surveys, the query among NSIs showed that only a few countries have implemented CAWI for social surveys at this point in time. Web questionnaires for social surveys require a different design than business surveys, so that implementing the same form/questionnaire design standards is less recommendable. Respondents expect web questionnaires in official statistics to be designed similar to other surveys they already know from social and market research. Since web questionnaires in social surveys are currently only conceivable as part of a mixed mode survey design, it is
paramount that the intent of every single question in each mode remains the same as in the basic mode applied (assurance of functional equivalence). Apart from the design and presentation of the questions itself, CAWI instruments have additional challenges to solve: Even though the functionality might be perfect, people do not necessarily know how to use the system. Therefore, the usability needs to be tested so that the quality of collected data is safeguarded. Finally, with regard to IT, the applications must be executable on the most important browsers and platforms.

All partners carried out qualitative tests on their LFS CAWI applications. Partners implemented their pretests at different points in time and based on different situations, such as which mode has been the main mode before, the total length of the survey, individual or household based questionnaire, etc. This testing approach in a group of five NSIs allowed covering a wide range of different research questions under a variety of different national circumstances. These experiences can be shared and will be of use for other NSIs. Key insights from the project include:

1. **Feasibility of web**: The Dutch experience in running CAWI as part of their LFS mixed mode design and the insights from testing in the other four project partner countries show that in terms of functionality and usability web questionnaires can be employed to conduct social surveys. In this respect, CAWI can be viewed as an additional mode with particular advantages and disadvantages.

2. **The particular advantages and disadvantages of CAWI**: Web surveys combine the advantages of computer-assisted questionnaires, such as automatic routing and edit checks, with the standardisation of self-completion questionnaires: On the one hand, there is no measurement error introduced by the presence and behaviour of interviewers. The flexibility of completion time is user-friendly. On the other hand, the absence of interviewers in web questionnaires is likely to also cause measurement error. Particular subgroups among the respondents seem to need the advice that interviewers provide with more complicated questions in the LFS and which they do not receive in web questionnaires, either because the necessary instructions are not available in web or because the respondents lack the motivation to receive help, for example by clicking on hyperlinked instructions. Getting respondents to read instructions and providing particular respondents with the help necessary for them is a remaining challenge in the design of web questionnaires.

3. **Unimode vs. mode-specific approach**: There is an on-going discussion among survey methodologists about the best approach when developing new web questionnaires for a mixed mode survey. The unimode design principle states that questions, answer categories and explanations should be designed equally across all modes so that respondents provide the same answers, independent of the mode in which the questions are asked. In contrast, proponents of mode-specific questionnaire design argue that in order to avoid measurement differences between modes it is sometimes necessary to intentionally design questionnaires differently. Instead of using the same stimulus to receive the same response across all modes (unimode), questionnaires
could contain different but functionally equivalent stimuli across different modes with the aim of achieving similar answer distributions (mode-specific). While for most questions the straightforward unimode approach is likely to be the most reliable to achieve measurement equivalence, the project concludes that with regard to some design choices it is advisable to adjust the questionnaire for CAWI. Adaption is particularly necessary with regard to the amount, wording and display of instructions, the type and amount of error checks and the use of grids. Caution should be exercised when it comes to changing the wording of questions and answer categories.

4. **A proper visual design** is one of the highest priorities when converting an interviewer-administrated questionnaire to an online self-completion format in which the questionnaire is the only communication channel to reach the respondent. Web questionnaire design is communication design. Inadequately displayed and labelled functionalities and the use of inappropriate wording of questions potentially increase respondent burden and may lead to high drop-out rates. Testing of the general web questionnaire design in each NSI is therefore obligatory in order to safeguard data quality.

5. **Self-completion:** After the project, the concern remains that due to the self-completion aspect of CAWI, important concepts may not be fully grasped by respondents. In theory, the helpful assistance from interviewers could be replaced by comprehensive instructions and explanations. Within the project, several approaches to bring across crucial information to respondents of web questionnaires were tested. A general finding of pretests in all countries is that a substantial amount of respondents do not make use of instructions and explanations. This can be due to the fact that respondents feel no need for additional information, fail to notice the information offered to them or try to avoid any additional efforts in the answer process that they consider unnecessary.

6. **Questionnaire length:** The considerable length of some questionnaires in social surveys might not prove ideal for the CAWI mode. Higher breakoff rates and general satisficing behaviour are to be expected. There are several measures that can be taken to reduce the questionnaire length and the burden for respondents, such as the use of register data or dependent interviewing. The length of questionnaires could also be reduced by increasing the number of waves that respondents participate in. The same survey content would then be distributed across a larger number of waves. This approach does not necessarily reduce respondent burden but it can considerably shorten the length of questionnaires. In countries with lengthy questionnaires it is advisable to launch quantitative research in order to check the possibly negative impact of questionnaire length on data quality and break-off-rates.

7. **Software:** The requirements for appropriate software go beyond the needs for just a good web questionnaire design. Any software package, be it off-the-shelf or developed in-house, needs to fit into the entire mixed-mode and IT environment of the respective NSI. Ideally, decisions on software faced with today should also try to antici-
pate future requirements. For example, in the course of modernisation of social statistics, it might be decided to view questionnaire contents in terms of modules rather than whole surveys. The chosen software should ideally allow adapting for such changes.

8. **Mobile and other devices**: The variation in terms of device types, operative systems, screen resolutions and browsers has increased manifold in recent years. Striving towards technical stability and functional equivalence across as many technical configurations as possible is a great challenge. NSIs cannot fully control the computer settings of their respondents but must strive to adapt to the constellations most common among users. One trend is that the number of web survey respondents completing web questionnaires on tablets has significantly increased in recent years. If not “mobile-friendly”, questionnaires should therefore be at least sufficiently “finger-friendly” to facilitate completion on tablet devices.

Some limitations should be considered when interpreting the pretest results from this project. Many findings from qualitative pretests have yet to be confirmed by quantitative research. The way respondents behave in the context of tests, which often take place in a laboratory setting, is likely to be different than the behaviour of respondents who have to complete the web questionnaire in everyday circumstances at home. It is also important to consider that in the process of creating web questionnaires, country-specific circumstances need to be taken into account. As a consequence, some findings from the pretests might not be generalisable to other national contexts.

### 1.3.3 Multi-mode data collection

Work package III of the ESSnet-DCSS concentrated on mixed mode data collection, specifically with a view on the combination of web (CAWI) with other modes (CAPI, CATI, and/or paper). The focus was on mixed mode designs within one fieldwork period and one wave, although attention was also given to the use of web as a mode for the second wave of the LFS. There were three major topics in this work package: a) the organisation of mixed mode data collection, b) mode effects, and c) estimation and adjustment.

#### a) The organisation of mixed mode data collection including web

**Which mixed mode design?**

The query showed that a plethora of designs is used in the ESS, with all kinds of mixes, in all kinds of sequences. Also within NSIs, modes and mode mixes differ for various surveys. An important lesson of this ESSnet was that there is no such thing as the best mixed mode design. The design should depend on the purpose of introducing mixed mode designs. If the purpose is to decrease costs, a consecutive design where the cheapest mode is offered first is the obvious choice. On the other hand, if the purpose is to decrease coverage error or non-response error, a concurrent design where the respondent is given a choice of modes, or a consecutive design where the mode with the lowest coverage and non-response error is offered first, should be considered.
We recommend that design decisions need to take into account different aspects of data quality, response burden and costs. As methodological, practical, technological, legal and other framework conditions will differ from country to country, it is difficult to give very concrete advice.

**Mixed mode designs and response rates**

A number of NSIs mentioned the expectation that response rates would rise as a result of implementing mixed mode data collection. However, both the query and the pilots in the ESSnet show that it is certainly not a given that response rates will go up, or will even be maintained in a mixed mode design. The response rate may go up if one starts with the most expensive mode, does all one’s best to attain the highest possible response in that mode, and subsequently offers other modes to non-respondents. On the other hand, response rates will probably go down somewhat if one starts with the cheapest mode and then offers other modes to non-respondents. The reason why this happens is not yet clear, but the phenomenon is found repeatedly.

These remarks on response rates should be considered within the context of the following two paragraphs on web response and costs.

**Web response**

A clear conclusion from the ESSnet and other experiences is that web cannot (yet) be the only mode in official statistics. Generally, response rates are low and biased. The rates that are attained depend on the design and are a function of the timing of the web mode (as first mode, as choice mode, as mode in a second wave, etc.), of the legal status of the survey (mandatory or voluntary) and of the topic of the survey (within one NSI, rates may vary from 10% to almost 50%, depending on the topic). In the pilots of this ESSnet, the web response of the LFS, when offered as the first mode in a voluntary survey, varied in the 25-30% region.

NSIs that consider web data collection hope that offering web will attract respondents that are under-represented in the main stream modes. We found that this is not the case. The same respondents who respond in CATI and/or CAPI are also the ones who respond in web. The same groups that are underrepresented in CAPI and CAPI are underrepresented in web: the young, ethnic minorities and people with low education and/or low income. The highest web response in a web-first design was in various cases found in the 55-65 years old group, followed by the group of 66 to 75 years old.

Because of these low rates, the bias and the lack of complete internet coverage in most countries, web cannot, at least for the foreseeable future, be the only mode. It must be complemented with other modes in a mixed mode design. The ESSnet, as well as experiences in countries that already employ mixed mode data collection with web, showed that these mixed mode designs can produce response rates and representativeness that are similar to CAPI.
The project reports discuss various recommendations to attain a high web response rate, among those the advance letter, the number of reminders, the timing of the advance letter and reminders, incentives, look and feel of the questionnaire and the login procedure.

**Costs**

Fieldwork costs are an important consideration for many countries when introducing mixed mode data collection. Most countries indicate that fieldwork costs decreased after the introduction of mixed mode data collection, sometimes by significant amounts. Others, however, indicated that costs became higher or remained the same. The costs development is essentially a factor of the initial design.

Although fieldwork costs for web data collection are relatively low, introducing web into the design may lead to increased costs for other aspects of fieldwork. Reasons could for example be: a) that the remaining persons who did not respond to the web questionnaire may require more effort to be traced and persuaded to participate in other modes; b) that interviewers may expect higher remuneration for the more difficult work; or c) that travel distances between interviews could be longer for interviewers.

Fieldwork costs are but one of the components of the costs of running a survey. Introduction of mixed mode data collection can have cost implications for all other stages, like sampling, data processing, case management, and adjustment. Especially if IT systems need to be bought or developed, that could mean a major investment. Also, the greater complexity of the other stages may potentially reduce the costs savings that can be attained. For example, multiple modes may mean multiple questionnaires, and more testing. NSIs indicated that some costs went up while others went down. Some indicate that, although other costs may have gone up, this is easily compensated by the decrease in costs of data collection. Most countries foresee that the balance of costs and profits of mixing modes will become more profitable in the coming years.

**Case management systems**

Case management is a critical function for the efficient operation of interviewing systems. Case management systems provide the interviewer with sample cases, feed the appropriate information to the interviewing system, and accept the completed survey information, together with relevant paradata, back. For CATI systems, functionalities include sample management, call scheduling, case management, online interviewing, online monitoring, keeping track of call histories, keeping track of call outcome data, management of interviewing staff, etc. CAPI systems may in addition need functionality to record interviewer time and expenses, information about respondents and possibilities for random sampling within a subset of household members. Designing an efficient case management system for one mode is complicated in itself but getting the systems to communicate, which is necessary in mixed mode designs, adds substantially to the complications. A number of NSIs are presently in the process of developing new case management systems for mixed mode data collection (e.g.,...
Norway, Austria, the Netherlands, the UK). Some develop the system themselves; others try to adapt costumer-off-the-shelf (COTS) software to their purpose.

When planning a case management system one has to decide whether to create the system in-house or to try and find an existing software package that meets the necessary requirements. There are several examples of differing solutions of current and planned systems: several NSIs are building their own system (e.g., Sweden and Austria), Statistics Netherlands is investigating a COTS solution. Most other countries investigate or build hybrid systems, with a combination of COTS and in-house systems.
b) Mode effects

Within this ESSnet, several analyses on the prevalence and magnitude of mode effects in the Labour Force Survey were undertaken. One of the deliverables in the ESSnet was an overview of the definition, identification and analysis of mode effects. Measuring mode effects is complex. The report describes four quantitative approaches and a qualitative one that are used most frequently to determine mode effects. Each of these has its advantages, but all of them also have limitations, so that there is no ‘best’ way to determine mode effects. There were three experimental studies of mode effects as part of the project.

The German experiment compared web to CATI, CAPI and paper-and-pencil (PAP) in a random allocation experiment. The conclusion was that mode-specific measurement effects are no major impediment to using multiple data collection modes in the LFS. The use of computer-assisted web interviewing as an additional data collection mode is feasible. For most of the variables under consideration, there were only minor differences between the data collected via interviewer-assisted data collection modes and CAWI. In contrast, numerous differences were found comparing the data collected via self-administered paper-and-pencil questionnaire and the other three modes under consideration, indicating that the PAP data were clearly inferior in terms of data quality.

The Dutch findings were based on comparison of parallel runs of a mixed mode (CAWI, CATI, CAPI) LFS with the traditional Dutch single-mode CAPI design for the LFS. In addition, an experiment compared LFS and other variables in a random allocation of CAWI, CATI, CAPI and paper-and-pencil. The first round of random allocation was followed by a re-interview round in (mostly) CAPI. The experiment was set up to be able to decompose mode effects into three components: mode-specific coverage bias, mode-specific nonresponse bias and mode-specific measurement bias. Coverage bias arises because of differences in access to survey modes, i.e., in access to Web and in registration of a telephone number. Nonresponse bias is the result of differences in contactability and response propensity over survey modes. Measurement bias is the consequence of different answers to different survey modes from the same respondents.

It was found that employment and unemployment estimates for CATI and CAWI differ significantly from those in CAPI. However, selection effects could be explained to a large extent by standard registry variables of Statistics Netherlands. Measurement effects for both CATI and CAWI were not significantly different from zero. However, the estimates for the survey questions underlying employment status (having a job, wanting a job, seeking a job and being available) do show measurement effects. The questionnaires should be evaluated and possibly adapted in order to reduce these differences between modes.

Finland compared CAWI to the traditional CATI questionnaire of the LFS. They found that there were no significant mode effects on employment status between CATI and CAWI. CAWI respondents reported a lower number of hours worked in the reference week. The difference could be diminished by adapting the question in CAWI, and thus essentially offering a different question in the two modes.
In conclusion, there is evidence from this ESSnet and other findings that measurement errors are an important source of differences between modes in some but not all surveys. For the LFS the differences between modes (PAP, CAWI, CATI, CAPI) can mostly be explained with common weighting variables. This finding is replicated in the Netherlands, Germany and Finland. However, this is not always the case: large mode effects in the Dutch Safety Monitor have led to a restriction in the modes to web and paper, that is, non-interviewer modes. Likewise, in the Finnish Consumer Sentiments Survey, large mode differences led to the decision not to introduce web data collection in this survey. Research on the British Opinions Survey showed that mode effects can be explained, but in order to do that, additional auxiliary variables are necessary, more than are standardly available for weighting.

Experiments and case studies show that mode effects should be taken seriously; however, it is hardly possible to determine for each survey and each mode combination whether mode effects are of importance. We recommend developing decision rules for choices in the survey design: Is every sample unit subjected to the same modes? Will we be able to adjust afterwards? Can we stabilize findings? These choices depend on the relative amount of selection and measurement effects, and on the choice of benchmark (e.g., CAPI, or a mix of modes).

c) Estimation in mixed mode data collection

When the composition of the response obtained in a mixed-mode data collection strategy can fluctuate – between subpopulation or between time periods – comparability of the resulting statistics may be compromised. If the modes exhibit relative measurement errors for a survey variable, then these measurement errors constitute part of the final estimate for that variable, as variations seen in the mode composition will manifest themselves as fluctuations in resulting LFS estimates, a situation that is to be avoided. The deliverables written for the third topic in the ESSnet investigate the effect on the estimates of stabilizing the mode composition.

Although a large body of literature is available on quantifying and explaining mode effects, not many approaches have been developed so far to correct for mode-dependent measurement errors. The methods of Suzer-Gurtekin and of Buelens and van den Brakel address comparability and stability of estimates in scenarios where the response mode composition fluctuates. The objective of this approach is to stabilise the potential mode-specific measurement error bias in the estimates over time and across subpopulation groups. Another ap-

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The approach, developed by Kim\(^8\), attempts to adjust returned values at unit level for continuous variables, assuming that the measurement error results in no bias but increases the variance. This approach attempts to remove any potential measurement error bias in the estimates of all subpopulation groups.

The method of Buelens and van den Brakel adjusts the GREG weights in such a way that they simultaneously correct for selection effects and obtain a specific, pre-set response mode composition. The method is applied once and is valid for all survey variables. The method of Suzer-Gurtekin et al. leaves the GREG weights unaltered, but adjusts the survey answers of the respondents. This method is specific to the survey variable in question. Both methods assume a particular measurement error model and assume that the covariates explain the selection effect.

It appeared that the two methods give very similar results for the estimated number of unemployed based on the first wave of monthly LFS data. Furthermore, the two adjusted series are comparable to the original, regular series in use for official publication purposes.

The third method, by Kim, was applied to employment data from a split face-to-face and web sample design on British Opinion Survey data, and used a number of socio-demographic variables as model covariates. In the resulting solution, the estimated measurement error bias was thought to be rather too large, indicating that the set of available covariates used in the models could not account for the effects of mode selection.

This is an area where research has only just started, and further work needs to be done. We have seen that methods for adjusting for measurement errors can be developed but they have limitations and rely on assumptions that are difficult to verify. In all methods, auxiliary data need to be available and of good quality. These can be registry data or paradata that resemble registry information. The method in Buelens and van den Brakel shows promise and is relatively easy to implement, but it only addresses the problem partially since the bias is not removed. Even though the measurement bias in the survey estimates will not be removed, applying these kinds of adjustment methods is recommended to keep the measurement bias under control.

For the time being, it is only through careful questionnaire design and pre-testing of questionnaires in mixed mode settings that relative measurement effects can be avoided or reduced.

### 1.3.4 Dissemination Actions

At the beginning of the ESSnet DCSS, the UNECE seminar on “New Frontieres for Statistical Data Collection” was informed about the project. A total of more than 20 presentations were given at international conferences to disseminate the project objectives and preliminary results.

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\(^8\) Kim, J-K (2013). An imputation approach for analysing mixed-mode surveys, Presentation at the ESRA conference, July 2013, Ljubljana, Slovenia.
The Working Group LAMAS\textsuperscript{9} has been informed during the entire running time of the project.

The dissemination actions of the project met with a considerable interest within the ESS. All deliverables and a number of further documents are available on the project website on the cros-portal: \url{http://www.cros-portal.eu/content/data-collection}. In August 2014, the total number of visits to the website reached 5,000.

Towards the end of the project period, on 4/5 September 2014, Destatis organised and hosted the Workshop "Data Collection for Social Surveys using Multiple Modes". Aims of the event were to present the findings of the project but to also hear from speakers from NSIs outside the project. Furthermore, two leading researchers in the field of web surveys, Mick Couper (University of Michigan) and Gerry Nicholaas (Ipsos MORI, UK) participated in the workshop.

A total of 95 participants from 26 national statistical offices from the ESS but also from third countries, such as the US or Canada, attended the event. The workshop allowed for a broad exchange of experiences, plans and approaches with regard to the introduction of web and mixed mode data collection in social statistics. The potential benefits and drawbacks were critically discussed. In a concluding panel discussion (chaired by Eurostat), representatives of NSIs as well as researchers outside the realm of official statistics talked about the upcoming challenges and the need for further research in the field of web and mixed mode data collection. There was a general agreement among the panelists and workshop participants that an on-going exchange on these important matters of modernisation of social statistics is necessary to safeguard gained knowledge in the future (see next chapter).

The workshop programme, including abstracts and slides of all presentations, can be found at: \url{http://www.cros-portal.eu/content/data-collection}

\section*{1.4 Impact of the Project in the ESS and Outlook}

The extended use of multiple mode data collection including CAWI for social surveys has been considered part of the strategy to modernise European social statistics (Eurostat 2011). In fact, the query among NSIs in the ESS has shown that while web questionnaires are still rarely used in population surveys in official statistics at this point in time, mixed mode data collection is already reality in a lot of countries, and the near future will see the addition of web to mixed mode designs in a number of European countries. 14 out of 24 statistical offices state in 2013 that they have concrete plans to add web in social surveys within the following five years.

\textsuperscript{9} see Annex D4_6
The potential for further ESSnet cooperation on web and mixed mode data collection

A continued European exchange and further measures of cooperation within the ESS will be an important aspect of the on-going efforts to modernise European social statistics. The findings from the ESSnet DCSS project provide a good platform for future work on the issues of web and mixed mode data collection in social surveys.

In 2014, we are still at the beginning of a continuing move towards web and mixed mode data collection in official statistics. Three leading questions of the project were:

- How to best design web questionnaires for mixed mode social surveys?
- How to best organise mixed mode data collection?
- How to best measure and adjust for mode effects?

These questions defy simple answers, and the answers provided by the project do not once and for all settle these complex issues in mixed mode data collection. However, the current results do serve as a helpful support for NSIs starting the process of designing web questionnaires for social surveys and moving to more complex mixed mode data collection designs. While the national contexts in which NSIs operate are too unique to provide universal recommendations for the ESS, the project reports detail which questions NSIs need to ask themselves before advancing in the area of web and mixed mode data collection and they show different courses of action that should be taken by NSIs in particular circumstances. The ESSnet DCSS itself showed that a close exchange of experiences and plans between European NSIs with regard to the advancement of web and mixed mode data collection in social surveys is a very fertile undertaking. Yet every country needs to thoroughly test their particular designs themselves due to the specific national circumstances.

Future challenges and the modernisation of social statistics

The introduction of mixed mode data collection including CAWI raises challenges that go beyond the mere design of good web questionnaires. It became clear during the work on the project that thinking about strategies to conduct web and mixed mode data collection inevitably means to also think about other connected issues in the modernisation of social statistics. When implementing the CAWI instrument as an additional mode it became apparent, that a lot of other issues with regard to the entire statistical production process in social statistics need to be reconsidered.

The topic of case management systems for mixed mode designs, for example, raises questions that go beyond the mere design of appropriate questionnaire tools but concerns the whole IT system behind data collection. As the organisation of fieldwork in mixed mode surveys becomes more complex, the demands on the IT environment will also grow.

Web questionnaires in social surveys should be designed for a mixed mode environment. Even though the programming of web questionnaires may start from scratch, the design has to meet many requirements which have been applied in other modes in the past. The pretest
reports written for this project discuss the practical implications behind the theoretical discus-
sions on different strategies to create web questionnaires for mixed mode surveys (uni-mode vs. specified mode designs). There seems to be an emerging debate on the potential benefits of moving to a uniform questionnaire design in mixed mode surveys with CATI, CAPI and CAWI. Instead of following the specified mode idea of individually adapting questionnaires for different modes (potentially also using different software packages for the questionnaire design of different modes), a radically different approach would be to programme one common electronic questionnaire for CAWI, CATI and CAPI. This might be more effective, but has certain drawbacks which need to be thoroughly discussed. Web questionnaires could take over the role of a model questionnaire in this scenario, being also used for other forms of computer-assisted interviewing. While this approach might help to curb costs in the design and testing of questionnaires, it is an open question whether electronic questionnaires designed for CAWI could be successfully employed in the field for CATI and CAPI.

In the discussion on adequate questionnaire design for the various modes the challenge of web questionnaire display on mobile devices should not be neglected. CAWI for mobile devices could be considered a survey mode in itself, with particular demands for questionnaire development that are different from all other modes.

Software choices are important in setting the course for an efficient organisation of the pro-
gramming of computer-assisted survey modes. Before taking decisions on a software pack-
age to programme web questionnaires, it is advisable to also check if the software can sup-
port other modes at the same time or can at least make use of the same data base in which question wording, answering categories, variables, values, skips or error checks are stored. This function is particular important when the organisation of surveys moves into a modularised direction, i.e. when the content of surveys is organised in a modular architecture.

**Potential for future cooperation**

Many countries consider or plan the introduction of web data collection in social surveys in the near future. While national circumstances in each country are unique, many challenges faced by NSIs are similar. A comprehensive exchange of knowledge, experiences and best practices among NSIs is therefore very helpful for countries planning to introduce or increasing rely on multiple mode and web data collection. In the query on the current state of data collection for social surveys in the ESS, NSIs stated that there is a demand for future cooperation and assistance within the ESS on web questionnaire design and the organisation of mixed mode data collection.

According to the new policy on ESSnet projects, they are supposed to support the implementation of the ESS Vision 2020, which goes back to May 2012 when the ESSC adopted a new ESSnet strategy with two main features10:

“The new “top down” vision implementation strand of the ESSnet program (the strategy continues to allow “bottom up” projects, thus providing for some relatively small actions in specific domains).

- The emphasis on the sustainability of results of ESSnet projects once they are finished through Centres of Excellence.”

Future ESSnet projects will follow this new vision. The chief aim is to decrease the amount of projects and to run more concrete work packages under one roof. This shall lead to better coordination of projects, control, fewer overlaps among projects and an increased use of synergies. Eurostat further states that in this context, two overarching projects have been considered to be sufficiently developed to seek for the opinion of the DIME in October 2014 by written consultation:

- Sharing common functionalities in the ESS
- Quality of multisource statistics

It is conceivable that some topics discussed within the ESSnet DCSS can be linked with other ESSnet projects in the future, including the two projects mentioned above. Links could be made with regard many overarching topics, for example, technical and software developments (web questionnaire design; case-management) matters of data collection (mixed mode designs; case-management), access to statistical information on mobile devices (web questionnaires on smart phones and tablets) or statistical-mathematical topics (adjustment methods), just to name of few.

In more concrete terms, the following potential forms of follow-up cooperation on the topic of web and mixed mode data collection were discussed at the concluding workshop of the ESSnet DCSS:

- To carry out annual workshops to exchange plans and experiences on web and mixed mode data collection
- To establish a Centre of Competence on web and mixed mode data collection
- To update the “Handbook of Recommended Practices for Questionnaire Development and Testing in the European Statistical System” including detailed advice on the design of web questionnaires for mixed mode surveys
- To support training seminars on the design of web and mixed mode data collection

Another perspective would be to focus on particular sub-topics in the field of web and mixed mode data collection that demand further research and exchange. Such research topics could, for example, be:

- Measures to increase web response
- Adjustment for mode effects
- Web questionnaires for mobile devices
- Decision trees on selection of appropriate mixed-mode strategies
- Quality aspects regarding proxy interviews
- Dependent interviewing
- Coding variables, such as occupation and economic sector

### List of Partners and Contact Information

<table>
<thead>
<tr>
<th>Beneficiary</th>
<th>Contact Person</th>
<th>Contact Information</th>
</tr>
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<tbody>
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</tr>
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There are four major outputs from the project that provide readers with a comprehensive overview of the work that was done:

1. **Query on Data Collection for Social Surveys**: This report summarises the status quo of web and mixed mode data collection in social surveys based on a survey among NSIs in the ESS and beyond (D2_2) or Annex 1
2. **Report WP II “Web Data Collection”**: Testing Web Questionnaires for the Labour Force Survey in Five Countries. This report summarises the findings from tests of LFS web questionnaires in all five project countries (D2_8) or Annex 2
3. **WP III Summary Report**: This report compiles all major findings from Work Package III “Multi mode data collection design” (D3_7) or Annex 3
4. **ESSnet Workshop** on “Data Collection in Social Surveys using Multiple Modes” (DCSS). The following link provides access to abstracts and slides form all presentations that were given at the concluding workshop of the project: [http://www.cros-portal.eu/content/workshop-wiesbaden-0](http://www.cros-portal.eu/content/workshop-wiesbaden-0) or Annex 4
The project started in September 2012 and concluded in September 2014 with the ESSnet Workshop on “Data Collection in Social Surveys Using Multiple Modes”. All project deliverables and additional documents are available at the project website: http://www.cros-portal.eu/content/data-collection.

2. Achievement of Project Objectives

This chapter provides an overview of the project objectives as included in Annex I of the Grant Agreement (Description of the Action) and their level of achievement. As provided in the contract, all deliverables were delivered. A few deliverables were delayed. The level of achievement is highlighted in green.

<table>
<thead>
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<th>End Month:</th>
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<td>Partner</td>
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Objectives
The ESSnet on Data Collection in Social Surveys using Multiple Modes (ESSnet DCSS) will be carried out by a consortium of five project partners. Additionally a sub-contractor is engaged in the project as external consultant to assure quality standards and reflect the state-of-the-art in the expected findings. The entire group will be coordinated by Destatis. The herewith described work package 1 “Management” consequently includes coordinating the work of all partners, the requested reflection by the sub-contractor and the collaboration with the support-group. It comprises adequate and necessary project management and administration services and the development of means for quality assurance. The objectives are

- to coordinate the activities of the consortium via setting up detailed work plans,
- to monitor that deadlines are being respected and deliverables provided as scheduled,
- to monitor that the work is being carried out in accordance with the objectives described for each work package and to make sure that the quality of the output is adequate given the big strategic importance of the project,
- to coordinate and release the intermediate and final report summarising the findings of the project,
- to create appropriate communication and conflict-solving mechanisms,
- to guarantee an effective involvement of the sub-contractor (external consultant) and the support-group,
- to organise the project meetings in close cooperation with the partners hosting the meetings.

Description of work
As coordinator, Destatis will provide (in close cooperation with participating countries and Eurostat) all necessary coordination and administration services as well as the organisation of meetings for a successful execution of the work described under the subsequent work packages. Destatis will also serve as first and main communication contact to Eurostat.

There will be four meetings to be organised: The kick-off meeting is hosted by Destatis and, at different milestones, two intermediate and one final meeting will be carried out. The meetings will be organised by the coordinator but hosted by different partners of the consortium. Also a monitoring mechanism is needed to identify problems and deficiencies as soon as possible to solve them. Therefore resources for bilateral meetings with the co-ordinator/ WP leaders and partners are calculated to deal with upcoming issues efficiently (see meetings). Furthermore a final workshop (see WP 4) is scheduled, that is intended to discuss the findings from the project and to release final results and
recommendations to a broader public within the ESS All member states are invited to participate. However, no travel expenses are to be covered by the project for this workshop, neither for members of the consortium, nor for other NSIs (see WP 4 and meetings). Both, the intended meetings as well as the intended deliverables will provide as milestones and base of the time schedule for the overall progress of the project.

The management duties also include the administration aspects of the work packages as a whole, supervising the time-schedule and consolidating the results as well as the information of the partners and Eurostat. Being the coordinator, Destatis will provide means for overseeing the progress of the project under the respective work packages, including an evaluation of the milestones and the production of deliverables. Specifically this requires regular internal monitoring reports within the consortium as well as the intermediate and the final report to Eurostat on the progress and the results of the ESSnet. Besides the reports also a monitoring mechanism is needed to identify problems or deficiencies as soon as possible to solve them.

Sub-Tasks:
- On-going coordination, management and administration (including monitoring and budgetary matters)
- On-going communication with the partners, the members of the support-group, the external consultant, and Eurostat
- Organising four consortium meetings, possibly two bilateral meetings and the workshop
- Setting up appropriate communication and conflict resolution mechanisms
- Development and distribution of standard reporting instruments for all participants
- Monitoring of the time schedule and in particular the milestones defined in the work plan
- Verification and quality insurance of deliverables (in cooperation with the sub-contractor and the support-group)
- Intermediate report to Eurostat describing the progress of the ESSnet and possible risk factors
- Drafting of the final report in close consultation with the project partners
- Management for adequate dissemination of results (in cooperation with the partners and Eurostat; for detailed description see work package 4)

**Deliverables** (brief description and month of delivery)

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<tr>
<td>Detailed work plan for the entire project (D1_2)</td>
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<tr>
<td>Intermediary Report (D1_3)</td>
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<tr>
<td>Final Report (D1_4)</td>
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*Deliverables: All deliverables have been provided as stipulated. The final report was delivered in due time within the accepted time frame of the contract.*

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<tr>
<th>Work package number</th>
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<td>2</td>
<td>M 1</td>
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**Title**
Web data collection

**Partner**
DE NL NO FI UK

**Objectives**
The ESSnet Project on Data Collection in Social Surveys using Multiple Modes (ESSnet DCSS) has been initiated by Eurostat and can be traced back to several NSIs having started to develop web-
based data collection (CAWI) for social surveys and particular in the LFS. Whereas CAWI is quite common for business surveys, only a few countries have implemented CAWI for social surveys.

However, web questionnaires for social surveys need a different design in comparison to business surveys, as respondents and topics differ. In addition, some business questionnaires look more like forms or templates, rather than questionnaires. Expectations by respondents on electronic questionnaires in turn are more related to features they are used to in market research or surfing in the Internet. Consequently, standardised CAWI applications used for business surveys cannot be applied directly as prototypes for social surveys. Thus, often CAWI instruments need to be developed from the scratch. Additionally, a rather “clever” instrument shall be provided, e.g. including errors to be checked when filling in the questionnaires or the automatic navigation. In order to meet all these expectations and safeguard a high-quality data collection mode, it is of importance to develop CAWI instruments thoroughly and by profound knowledge. Supplementary, as being another mode to be applied in the LFS (besides CATI, CAPI, PAPI) it is of importance to make sure, that the intent of each single question remains the same as in the basic mode applied (assurance of functional equivalence). Besides the design and presentation of the questions itself, CAWI instruments have an additional challenges to solve: Even though the functionality might be almost perfect, people do not necessarily know how to use the system, so the usability could still be low, which then leads to low quality of collected data. Finally, with regard to IT-technology it needs to be verified, if the basic features of the applications are executed on the majority of the respondents PCs in the same way.

Additionally, it has been decided for this ESSnet to select the Labour Force Survey (LFS) as the survey to concentrate the developments in order to work more efficient on a concrete task. Tools and best practices, for instance, are discussed in a more targeted way, if linked to a particular survey. The LFS is well suited for this purpose: It may have potential for cost savings, it is established in many countries, it is therefore highly harmonised and it is usually conducted by multiple modes. Thus, the LFS is as an adequate example to study multi-mode data collection in social surveys. However, apart from being a methodologically challenging survey, a revision of the LFS regulation is currently being prepared; coming into force is expected for 2016. Concerning the ESSNet, the most relevant changes of the regulation include the following: mandatory use of an intra-annual rotation panel, harmonisation of rotation schemes, equal distribution of the sampling units over the calendar weeks (fixed reference week), mandatory use of computer-assisted data collection modes, as well as a significant improvement in timeliness. Furthermore, a modular structure for the LFS is discussed what might have implications for technical implementation issues, too.

Consequently, with regard to the general implementation of CAWI instruments for social surveys there are several challenges and pitfalls to check and investigate. Within the scope of the ESSNet a lot of these challenges can be studied in detail through tests and the compilation of the currently available knowledge. The findings and recommendations are of great use for those countries, which did not yet start developing CAWI instruments, but will probably be confronted with this task in the near future. Thus, the project’s output can be shared for the whole community and will facilitate the introduction of web data collection in the domain of social surveys in the ESS, while experiences and knowledge, possible sharing of tools and recommendations for best practice can be developed on a first step.

There are three main tasks to cover:

- to provide an overview on the currently applied LFS CAWI instruments in social statistics of the ESS with special emphasis on the LFS by the description of essential features of the tools;
- to describe the applied software applications with regard to necessary interfaces and settings such as data confidentiality, security and requirements on data storage and field organisation (some of the more general IT aspects will be dealt with in WP III)
- to test several different applications of LFS CAWI instruments by features such as navigation, error checks, filter questions, don’t know options, location of instructions, wording and comprehension of questions.

**Description of work**

Against the previously depicted background there are three main sub-tasks. Firstly an overview of
existing CAWI instruments in social statistics will be carried out by the coordinator. This overview is regarded as additional base for the selection of qualitative testing aims, supplementary to those to be selected in the consortium.

In contrast, the sub-tasks two and three are of consideration for all partners (including the coordinator). In preparation of the kick-off-meeting and during the meeting the specific aims below each sub-task and priorities will be negotiated. However, it is intended that all five partners will carry out qualitative pretesting on their LFS CAWI applications. Partners will carry out their pretests at different points in time so there will be a sequence of single pretests. The advantage of this approach is obvious: By implementing a good communication system it could be possible, to share experience and define follow-up research questions, which might be covered and tested within the scope of another partner’s pretest. Qualitative pretesting will basically be executed by cognitive interviews; three partners will use eye-trackers as well. Consequently, sub-tasks can be presented as such:

Sub-task 1:
The starting point: By launching a small survey to the NSIs in order to prepare an overview on currently applied CAWI instruments in social surveys within the ESS. Special focus will be on the LFS. The suggested review on electronic questionnaires will take issues into account such as specific or unimode approaches, type of mixed mode combinations (e.g. CATI and CAWI, or PAP and CAWI), paging or screening designs, complexity of surveys, off- or online technologies, software packages, standardisation requirements within each NSI. The review will prepared by the project coordinator.

Sub-task 2:
Five qualitative pretests for existing electronic questionnaires shall be conducted on the applications of the LFS. Features to be tested are e.g. login and password, navigation strategies, error checks, several household members in one CAWI instrument, presentation of instructions, placement of error, design of error messages, prefilled questionnaires, don’t know and empty options, functional equivalence of questions (unimode vs. specific mode questions), mode-sensitive questions, issues on satisficing. The detailed distribution of research questions to partners will be discussed and adopted in the kick-off-meeting and probably adjusted as soon as first results of pretests of some partners are available.

Subtask 3:
Within these scenarios, at least two different software programmes will be tested (since NSIs use different software applications) in order to define a profile of requirement when common tools are developed or recommendations on software issues shall be provided.

Germany
In Germany a prototype of a CAWI questionnaire for social surveys has been recently designed based on the well-established IDEV application (JAVA based programming) to be used as standard for business surveys. Therefore, the prototype as a LFS application shall be tested. It is basic concept at Destatis, that the performance of a CAWI instruments needs to be tested by the involvement of probands, since a good functionality (perfect technical running program) does not ensure automatically its usability (that probands find and use easily the offered functionalities). Consequently, Destatis will conduct several waves of qualitative pretesting in the Destatis’ pretest laboratory. By the combination of three methods, (a) observation when filling in, (b) cognitive interviewing and (c) eye-tracking will be used in order to search for an appropriate design (method of triangulation). Besides testing the general usability of the instrument there are three main perspectives to be tested: (1) Navigation: The CAWI instruments of Destatis offer either Forward- and Backward-Buttons or a navigational tree. Both possibilities have their advantages and disadvantages with regard to error checks and the use of household versus individual questionnaires. (2) Error checks: Placement, amount and error message design. (3) Instructions and support: Placement, length and necessity of instructions to operate the system are to be evaluated.
Finland
Statistics Finland will conduct a qualitative pretesting for LFS electronic questionnaire. The electronic questionnaire will be designed using BlaiseIS software.
In this phase, pretesting concentrates on questions concerning reference persons, as Statistics Finland have a sample of individuals, not a sample of households. Thus, the questions for household characteristics and household members are excluded in pretesting. In addition, the ad hoc modules and the questions about the reference person's occupation and field of industry are excluded from the pretesting, too.
In pretesting, Statistics Finland will focus on testing a) functional equivalence of questions, b) presentation of instructions and c) don't know and empty options. The process of pretesting is iterative. Cognitive interviews are carried out in three phases. Between the phases the electronic questionnaire can be revised based on the problems revealed by cognitive interviews. In total, about 18 interviews will be conducted.

Norway
Statistics Norway will base the development of questions for a CAWI instrument on an existing evaluation of the LFS questionnaire. Statistics Norway is envisioning a design where all 1st wave interviews are done as CATI or CAPI, in order to efficiently recruit respondents to the panel. Therefore, test persons will be recruited by interviewers via telephone and a first wave interview will be a regular one completed using CATI mode. The actual tests will be done as 2nd wave CAWI interviews, with data from the first wave interview being used as prefill. Retrospective think-aloud will be one of the methods used. To investigate visual and navigation issues, the testing for the PC CAWI version will be done using eyetracker equipment, and hopefully they will have access to eyetracking equipment for testing handheld devices as well.
Statistics Norway will try out Blaise IS as the CAWI tool. CAWI, however, is no longer just traditional PC CAWI. The intention is to develop user interfaces for tablets, smartphones and other handheld devices as well as PCs. Since users' expectations are different for different devices, efforts will be made to make necessary functionality adaptions. In addition, the CAWI tool will be integrated with Statistics Norway's case management system for CAPI and CATI, in order to enable effective sequential and/or concurrent multi-mode data collection designs.

United Kingdom
Currently the LFS is not offered electronically, consequently ONS will need to develop and programme a questionnaire. However, other surveys within ONS are offered electronically and therefore the appropriate knowledge and skills are available to complete this work. It is intended that Blaise IS will be applied; albeit other software packages are additionally in discussion. Qualitative testing of the LFS electronic questionnaire will be carried out with respondents in their homes by cognitive interview (two to three waves of testing). Testing will be on an individual basis. Basic design features will be tested such as the entire functionality of the instrument as well as the visual design. Of particular interest are:
- Design of questions; generic design of questions or specific presentation of questions and its impact.
- The complexity of passwords and the design/accessibility of the portal questionnaire as well as an appropriate length of an electronic questionnaire.
Aspects of satisficing when filling in electronic questionnaires in comparison with other modes.

The Netherlands
CBS is currently running a part of the LFS Survey in a mixed-mode design, with CAWI as first choice, followed by other modes. Consequently quantitative data using different modes are available. However, the CAWI instrument nor the CATI instrument have been pretested in advance. This serves as a perfect opportunity to evaluate already existing data sets in order to find out by quantitative research what seems to be problematic using the CAWI and CATI questionnaire. Based on these findings CBS
will launch qualitative pretesting on the CAWI instrument. Of particular interest are:
- Mode-sensitive questions and the development of questions that may counterbalance mode effects.
- CAWI applications and how and when to use empty options (as well as associated problems with regard to automatic navigation).
- Since qualitative pretesting serves to find out reasons on respondents behaviour when filling in, research will be carried out to understand the high panel attrition observed by the population replied by the CAWI instrument.
- Additionally the option of “don’t know” in a CAWI instrument will be studied.

Finally, the release of Blaise 5 offers the option to test various surface designs in order to understand more about ‘looks and feels’ of a user-friendly visual design for web questionnaire.

<table>
<thead>
<tr>
<th>Deliverables (brief description and month of delivery)</th>
<th>t + 2</th>
</tr>
</thead>
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<tr>
<td>Detailed work plan WP II (D2_1)</td>
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<tr>
<td>Review on currently applied LFS CAWI instruments in ESS [DE] (D2_2)</td>
<td>t + 4</td>
</tr>
<tr>
<td>Five reports on qualitative testing LFS CAWI instruments [by each partner] (D2_3 to D2_7)</td>
<td>t + 18</td>
</tr>
<tr>
<td>Summary work package report on Web data collection [DE] (D2_8)</td>
<td>t +20</td>
</tr>
</tbody>
</table>

Deliverables:
- Detailed work plan WP II delivered in time
- Review on currently applied LFS CAWI instruments in ESS delivered t + 19 (the reasons for this delay are explained in chapter 5 (Project Management) of this report; the report has been available on the cross-portal since May 2014)
- Five reports on qualitative testing delivered t + 20
- Summary WP II Report delivered t + 23 (due to need for revision after last project meeting in July 2014)

**Work package number**

<table>
<thead>
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<th>3</th>
<th>Start Month: M 1</th>
<th>End Month: M 22</th>
</tr>
</thead>
</table>

**Title**

Multi mode data collection design

**Partner**

NL DE NO FI UK

**Objectives**

The objectives of the work package are
- to provide a state-of-the-art report on the current use of multiple mode data collection in the EU Labour Force Survey
- to identify strategies to adapt the multiple mode designs currently used (in most cases combining CAPI and CATI only) when web-based data collection is being introduced
- to compile the available knowledge regarding the organisation of multi mode data collection, including aspects like fieldwork, case management, nonresponse, panel attrition, timeliness etc.
- to compile the available knowledge on the impact of different data collection modes (“mode effects”) upon the measurement in social surveys
- to recommend strategies when analysing mode effects, both in specific experiments and in
Description of work

At the beginning a report on the state-of-the-art regarding the use of multiple data collection modes in the EU Labour Force Survey will be compiled. Based on a literature review and a small survey among all ESS countries, the combinations of data collection modes (e.g. computer-assisted, interviewer-assisted) currently used in the ESS as well as the sequences and order in which the different modes are implemented (e.g. concurrent vs. sequential) are in focus. The state-of-the-art will also be contrasted with the requirements ensuing from the current developments of the LFS, for instance the recommendations of the Task Force on Quality of the EFS and the issues discussed in view of the revision of the LFS’s legal basis.

Taking into account the findings of the state-of-the-art-report on multiple mode data collection in the ESS, the partners will analyse the preconditions, advantages and pitfalls of the use of multiple mode data collection in the LFS in their countries. Given the recent interest in computer-assisted web interviewing (CAWI), special emphasis will be on the use of web-based data collection. The work will include reviews of existing literature and experiences, secondary analyses of available data, and expert discussions in the consortium as well as with the sub-contractor and the support-group. The sub-contractor is especially well-known as specialist in mode-effects in social surveys. Given the limited resources and time, it will however not be possible to implement large scale quantitative studies. Small scale experiments in one or two countries might however be possible. The current knowledge will be summarised in a report, where findings, recommendations and further need of experiments in the ESS will be pointed out.

The work in this work package will include three major areas: organisation, measurement effects, as well as data processing and estimation.

Sub-task 1: Organisation of multiple mode data collection

The implementation of multiple mode data collection and in particular of web-based data collection will have important implications upon the various aspects of the organisation of data collection. Affected are the fieldwork organisation in general, the interviewer organisation and recruitment, but also response rates and panel attrition. Different multiple mode designs will lead to different impacts regarding these aspects. To analyse these impacts, current experiences and research will be reviewed. A report on the organisation of multiple mode data collection and applied software packages will be supplied. The report also includes a set of recommendations. It will also give a rough assessment of the cost-effectiveness of different multi-mode designs.

Sub-task 2: Measurement issues

It has often been shown that the data collection mode can have a substantial impact upon statistical measurement, and hence the accuracy of the estimates. For example, the number of employed persons, keeping all other survey parameters equal, can be different under computer-assisted telephone interviewing (CATI) compared to computer-assisted personal interviewing (CAPI). Although the study of mode effects has a long tradition in survey methodology, the definition, analysis and assessment of mode effects is far from being straightforward. For this reason, based on the relevant literature and experiences, we will firstly summarise the various components of mode effects, such as the type of communication channel (e.g. visual, audible, oral (face-to-face), audio-visual), the availability of an interviewer and the selection bias associated with certain modes (selection effects). The project will...
also discuss the question to which degree the wording of survey questions needs to be adapted to
the requirements of different modes (specific and unimode approaches and functional equivalence).
Applying this conceptual framework, the project will review existing studies and run secondary anal-
yses of existing data regarding the mode effects experienced in the LFS. In doing these analyses the
project will try to identify the mechanisms leading the diverging results. In these analyses different
LFS variables, like employment, unemployment, working time etc. will have special emphasis.

Based on these empirical findings, the project will take first steps towards the development of strate-
gies to reduce mode effects e.g. via questionnaire design and interviewer training under different
multiple mode designs. These strategies might be elaborated and evaluated in a second stage of the
project.

Subtask 3: Data processing and estimation under multiple mode data collection
Besides the methodological issues regarding multiple mode data collection, several technological
challenges need to be faced. This includes software packages used for data collection and their suit-
ability to be applied in a multi mode environment. Using one single software package for several
modes, at least on the national level, can reduce cost for IT development and at the same time re-
duce problems with fitting the data collected with different modes into one uniform data model. The
partners will use at least two different software packages in their settings, so that the consortium will
have the opportunity, to discuss drawbacks and advantages of one or the other package.

In addition, under tight time constraints, as is the case for the LFS, it is important to keep control of
which respondent is contacted with which mode. If no response is received using one mode, no time
must be lost to assign a different mode to this respondent. This task involves many aspects of the
fieldwork management, e.g. the coordination of field interviewers, a telephone studio, and the regis-
tration of incoming web responses (case management systems). Finally, a list of selection criteria on
helpful, suitable software package will be presented.

Moreover, estimation and weighting procedures under multiple mode designs can take mode effects
into consideration, e.g. by adjusting for mode effects and selection biases due to the data collection
mode. Based on the research and experiences available at some partners different approaches will
be compared. The output will be presented in the report of work package 3.

Germany
The Federal Statistical Office Germany will develop a basic approach for the analysis of measure-
ment effects due to the data collection mode (mode effects). To this end, based on the expertise
available at Destatis and in the consortium, but also the relevant literature, the different methodologi-
cal “sources” (like the presence or not of an interviewer, the possibilities to visualise the question-
naire, the importance of the characteristics of the interviewer’s voice etc.) will be identified and sys-
tematically described in a report.

For the case of the Germany, concrete mode effects will be analysed using data from the German
Labour Force Survey. For the quantification of mode effects, Destatis will also carry out secondary
analyses with data from an experimental study carried out by Destatis. The study, carried out in the
years 2009 and 2010 was implemented among 4000 persons. It covers the entire set of LFS vari-
bables and compares in a randomised experiment CAPI, CATI, CAWI, and self-administered PAPI data
collection. Thus it will enable us to provide a comprehensive overview of mode effects in very differ-
ent data collection modes and variables. Based on the experiences with that study, we will also pro-
vide recommendations for possible approaches towards the detection and analysis of mode effects.

Finland
Statistics Finland is going to do a web-pilot in the spring of 2013 just after the results of the qualitative
pretesting (WP 2) are ready. The pilot is going to be carried out by asking 6,000 target persons
(random sample) to use the web questionnaire done by the first part project for the qualitative
pretesting, and to compare the resulting data with the data collected by telephone interviews (the real
LFS data in Finland) at the same time period.
The target of the web-data collection pilot is to find out if there are some mode effects between telephone interview (LFS) and web data collection (the pilot data).

Statistics Finland will check if the response distributions of the web data collection differ from response distributions of telephone interviewing. The pilot will concentrate on the main variables and indicators of LFS.

Statistics Finland use BlaiseIS (or Blaise5) software for the web data collection.

Norway
At Statistics Norway, the Rent Market Survey, an ongoing multi-mode (CAWI, CAPI, CATI) address survey, will be used as a case. Process data from this survey can be used to illuminate several aspects of the organisation of a multi-mode data collection. The software packages and routines used to administer this survey need to be developed further to meet the needs of a multi-mode LFS.

At Statistics Norway, the results from the Rent Market Survey (see above) can also be used to shed light on mode effects. Like the LFS, this questionnaire contains factual questions; namely on types of housing arrangements as well as the amount paid in rent by the respondent/the respondent’s household.

United Kingdom
ONS plans to introduce web data collection for the LFS, alongside the face-to-face and telephone modes already used. The purpose is to save resources and to increase response by reducing burden on respondents.

Practicalities to be addressed include the impact on case management, and sampling issues, such as how to identify and deal with non-eligible addresses, and multi-household addresses. Finally, the development of best estimators is of interest, which includes the assessment of mode effects and selection effects. In particular, this will include:

- Comparison of different survey designs and their implementation (including concurrent and sequential selection of modes). Choices made at this stage will have an impact upon the sample design and estimation.
- Mode effects and selection effects: respondents with different characteristics may have different propensities to respond depending on the mode, and the mode itself may induce different responses. We would want to investigate methods for measuring these effects, and adjust for them in an appropriate way.
- Development of best estimators. Different estimators may be developed for the Web and Non-web populations, including the adjustments for selection and mode effects if appropriate. These then need to be combined into a single estimate for the entire population.

The Netherlands
- CBS has been carrying out the LFS by implementing a consecutive CAWI – CATI/CAPI mixed mode data collection design. Research has been carried out on the impact using such a complex design. CBS will make available the results and will summarize the implications of the present mixed mode data collection design for interviewer organisation, response rates, panel attrition, and cost-effectiveness. Based on these findings the consortium can adjust some of the planned actions within the tasks to launch the ESSnet more effective and problem-oriented.
- CBS will perform secondary analyses of mode effects for central LFS questions, to ascertain which LFS questions in which modes are susceptible to mode effects, and what question characteristics and/or selection effects and which mode characteristics explain those, and if these findings are uniform for all respondents. Also, the amount of proxy answering within modes will be studied in relation to this issue.
- Supplementary, CBS plans to listen in to CATI interviews of the recently developed CATI LFS.
to better understand the role of CATI in the origin of some mode effects.

- One or more small quantitative web experiments will be performed to test hypotheses and possible solutions concerning panel attrition.
- The web experiments will also be used to test versions of advance letters to optimize web response.
- CBS has implemented a sequential mixed mode data collection survey in the last three years. Basically CAWI has been implemented as first choice and subsequently CATI and CAPI as a matter of concurrent option. The inference procedures will be studied. The first approach is based on the generalized regression estimator. Measurement errors are kept constant by weighting the response to a pre-specified distribution over the modes. The second approach explores the possibilities of a model-based approach that explicitly assumes a measurement error model.
- CBS will summarize the collective findings of the partners.

### Deliverables (brief description and month of delivery)

<table>
<thead>
<tr>
<th>Deliverable</th>
<th>Month</th>
</tr>
</thead>
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<tr>
<td>Draft work plan WP III (D3_1)</td>
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<tr>
<td>Detailed work plan WP III (D3_2)</td>
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<tr>
<td>State-of-the-art report on the current use of multiple mode data collection in the EU Labour Force Survey (D3_3)</td>
<td>t + 4</td>
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<tr>
<td>Report on the organisation of multiple mode data collection (e.g. fieldwork and case management systems) (D3_4)</td>
<td>t + 18</td>
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<tr>
<td>Report on mode effects: Reports on the definition, identification and analysis of mode effects Case studies on mode effects using existing data from experimental studies (D3_5)</td>
<td>t + 18</td>
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<tr>
<td>Report on estimation approaches adjusting for mode effects and selection biases (D3_6)</td>
<td>t + 18</td>
</tr>
<tr>
<td>Summary work package report upon the use of multiple mode data collection in the EU LFS, including recommendations for further harmonisation (D3_7)</td>
<td>t + 20</td>
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### Deliverables:

- Workplan available as scheduled
- State-of-the-art report: delivered t + 19 (the reasons for this delay are explained in chapter 5 (Project Management) of this report; the report has been available on the cross-portal since May 2014)
- All deliverables available, some deliverables completed t + 21; summary report completed t + 23

### Task/Work package number

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<th>End Month:</th>
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<tr>
<td>4</td>
<td>M 1</td>
<td>M 24</td>
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</tbody>
</table>

### Title

Dissemination

### Partner

DE NL NO UK FI

### Objectives

The Work Package 4 on dissemination is considered to be one of the main tasks to support the European social statistics as a whole: It is applied to share knowledge gained in the ESSnet, to disseminate results and to discuss the recommendations with a broader audience beyond the consortium. A sound communication and dissemination strategy is a precondition to achieve important purposes of
the ESSnet: The development of common tools as well as, a further standardisation and harmonisation of the data collection procedures will only be possible on a commonly accepted knowledge basis. This is true for both main areas, i.e. the recommendations on the design of CAWI instruments on one hand and for the design of surveys using multiple mode data collection on the other.

These challenges do not only require a good communication strategy within the consortium (see WP 1), but also with non-participating countries and the academia. In this respect the strategy is all the more important, because the topic multiple mode design and the implementation of CAWI instruments is discussed currently at several workshops and conferences, without a common approach and project. Only the European Social Survey is currently running several research projects in different countries on mode-effects.

The previously mentioned objectives will be achieved by means of presentations at several workshops, conferences and working groups as well as by establishing an ESSnet-Portal, and by inviting an international expert as external consultant. The project will be presented either by the project-coordinator, by the WP-leaders or one of the consortium partners. The decision when and whom to be send will be discussed in the follow-up of meetings. The allocated budget is formally presented in the cost-calculation of Destatis, but actually shared by the consortium. Due to budget cuts only one representative of the consortium can be financed when presenting at conferences. Additionally a final workshop on the results of the ESSnet DCSS at the end of the project period will complete the intended tasks.

**Description of work**

**Sub-Tasks:**

In order to obtain a broadly based knowledge sharing and dissemination of findings three main channels for dissemination are pursued: (1) Dissemination via the ESSnet-Portal, (2) presentations at international conferences and (3) organisation of a specific workshop on the results of the ESSnet. The following subtasks will be carried out to meet the goals:

**Sub-task 1: ESSnet Portal**

Project description, aims, the state-of-the-art, intermediate and final reports of the project will be presented on the ESSnet portal http://www.essnet-portal.eu. The project website will have various important functions: It will serve as a dissemination platform, a feedback forum and will also provide contact details of the experts working on the ESSnet. Other non-participating countries will be invited to give feedback and comments on the project, for example on projects with similar research questions. An invitation e-mail with the link to this website will be sent to the responsible institutions in all Member states of the EU. The e-mail will inform about the project and welcome them to contribute remarks and input with regard to contents as well as to proceedings.

**Sub-task 2: Presentations at international conferences**

Findings and results of the ESSnet will mainly be distributed via presentations at several possible workshops or conferences. Which conferences will be actually attended depends on the state of the project at a given time, but also on budgetary aspects. The following conferences and workshops are optional frameworks for the respective presentations:

- The beginning of the project is considered to be autumn 2012. The Workshop on Internet Survey Methodology (ISM), to be hosted this year in Slovenia, shall serve as the starting platform for the first introduction of the ESSnet project, where aims, members of the consortium and work plans will be presented. The access and purpose of the ESSnet-Portal can also be announced. Since the ISM is not limited to statisticians of NSIs, but also to researchers from universities and research institutes on international level, the project will become established in the interested public from the beginning.
- With regard to the Labour Force Survey it appears to be beneficial that members of the consortium are also members of the of Working Group Labour Market Statistics (LAMAS) and are organisers of the annual Methodological Workshop on Labour Market Statistics.
Consequently, it is planned to inform about the intermediate and final report continuously in this fora. Here, practical implementation issues in the LFS can be taken into account from an early stage onwards:

- The UNECE Seminar on New Frontiers for Statistical Data Collection to be held in Geneva, 2012 will be an important opportunity to inform international associations, offices and institutions about the upcoming project. Both work package leaders will present the outline and purposes of the project.

- The biennial Conferences of the European Survey Research Association (ESRA) will be carried out in 2013. This is one of the most important conferences worldwide on social and methodological topics. It is attended by the world’s leading experts in survey methodology, and hence offers a unique opportunity to discuss both strategic as well as methodological issues of the ESSnet. In 2013, first results of the ESSnet can be presented and discussed. It is considered to organise one or more dedicated sessions on the ESSnet, led by the work package leaders and comprising the contributions of the project partners.

- Almost at the end of the project period, the European Conference on Quality in Official Statistics (Q2014) will take place in its regular interval. On this occasion an overview of the overall results and possible recommendations of the nearly completed ESSnet project could probably be presented. This conference provides the opportunity to discuss strategic issues of multiple mode data collections, like the impact of the ESSnet on the system of social surveys as a whole.

Sub-task 3: Workshop on the ESSnet DCSS

At the end of the ESSnet period, the findings of the project shall be presented at a specific Workshop, organised and hosted at Destatis. Results of the ESSnet and preliminary recommendations will be presented at that occasion. Non-participating Member States, other NSIs and the international research community will be invited to attend the workshop and to discuss the topics covered by the ESSnet.

**Deliverables (brief description and month of delivery)**

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<th>Deliverables</th>
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<td>UN/ECE Seminar on New Frontiers for Statistical Data Collection, Geneva</td>
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<td>Workshop on Internet Survey Methodology (ISM 2012), presentation on the</td>
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<td>structure of the project, consortium and contact, aims and goals of the</td>
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<td>project. Location: Slovenia (D4_2))</td>
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<td>Presentation of the ESSnet DCSS at the ESSnet portal [<a href="http://www.cros-">http://www.cros-</a></td>
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<tr>
<td>Conferences of the European Survey Research Association (ESRA). First</td>
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<tr>
<td>findings of the ESSnet: E.g. results on the reviews, first pretesting on</td>
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<td>CAWI instruments. Location: needs to be checked Final Report (D4_4)</td>
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<tr>
<td>Continuous verbal reports on Working groups of the LFS (LAMA) at Eurostat</td>
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<td>defined so far (D4_5)</td>
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<tr>
<td>Workshop ESSnet DCSS: Results and findings (D4_7)</td>
<td>t + 24</td>
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</table>
3. Work Completion

This chapter provides a description of the work achieved in Work Packages (WP) II, III and IV of the ESSnet DCSS project. The text will summarise the work that was done in each WP and discuss relevant findings of the project. WP I (Management) will be reported on in chapter 5 of this report.

The chapter on work completion will refer to the initial description of the action provided for in Annex I in the Grant Agreement of the project. Any deviations in the work of project partners from Annex I will be explained in the following text. Towards the end of the chapter, there will be a brief discussion of potential follow-up projects. All documents are available via http://www.cros-portal.eu/content/data-collection. Additionally, the three major reports are attached to this document.

3.1 WP II: Web Data Collection

Deliverables

- Detailed workplan
- Review/Query on currently applied LFS CAW instruments in ESS
- Five reports on qualitative testing LFS CAWI instruments
- Summary work package report on Web data collection

Annex I of the Grant Agreement defined three sub-tasks for WP II. First, the project coordinator (DE) in cooperation with the leader of WP III (NL) compiled an overview of the current use of web and mixed mode data collection in social surveys based on a query conducted with NSIs in the ESS and beyond. Detailed findings can be found in the deliverable D2_2. Second, all five project partners conducted pretests of LFS web questionnaires. This work resulted in six deliverables. There are five national pretests reports on the results of questionnaire testing in the respective countries (D3_3 to D2_7). These reports provided the basis for the thematically structured summary report including insights from all partner countries (D2_8). Finally, the work of programming and testing web questionnaires in the five project countries also yielded insights into the performance of different software packages used to develop web questionnaires. Software requirements for successfully conducting web surveys in a mixed mode environment were predominantly discussed in the context of WP III, particularly in deliverable D2_8. Additionally, pretest results from work done in WP II also provide some insights with regard to software choices that have to be made when introducing CAWI as part of a mixed mode survey design.
3.1.1 Deliverable D3_2: Review/Query on currently applied LFS CAWI instruments in the ESS

The query asked NSIs to report their experiences in implementing web questionnaires and using multiple data collection methods for social surveys. The focus of the ESSnet DCSS project is on the Labour Force Survey (LFS), but countries also gave information on their use of CAWI instruments and mixed mode designs in other social surveys. NSIs provided details on their current and future strategies regarding three topics: the design of web questionnaires, the implementation of mixed mode data collection and the application of software to design web questionnaires and manage data collection. The query also asked for suggestions on how to further increase cooperation among ESS countries in these crucial matters for the future development of official statistics.

The query was successfully implemented, though with some deviation from the original time schedule outlined in Annex I of the Grant Agreement. Both the project coordinator (DE) and the WP III leader (NL) worked in collaboration and released a joined query. Preparation took longer than expected. A sufficient software package had to be found that could deliver an appropriate design for the complex topics within an online self-administered survey. IPM, the software offered by Eurostat, did not provide all functions required, such as complex skips. Finally, the query was programmed at short notice in Blaise 5 at CBS Netherlands. Data collection took longer as expected (follow-ups, reminders), data processing, analysing and writing the report. As a consequence, completion of the deliverable of the query also got delayed.

Modes used in different social surveys

The query shows that web data collection for the LFS and for most of the other social surveys is still in an early phase of development. There is a wide diversity among the different surveys: While in the Census 13 countries implemented electronic questionnaires as concurrent mode, within the LFS so far only two countries – the Netherlands and Denmark – apply CAWI. In contrast, CAPI and CATI are still predominant modes in LFS data collection and other social surveys. Both modes (CAPI and CATI) share one specific character, which is the help of interviewers in administering the questionnaire. With the introduction of web questionnaires, the helpful support of interviewers is no longer available. It is therefore advisable to thoroughly observe how this change might affect data quality.

Generally speaking, it might be justified and good practice to implement web data collection in one social survey while it would be unadvisable for another survey. Survey design elements such as the unit of response (i.e., household or individuals), obligation (i.e., voluntary or mandatory), time references, the length and complexity of the survey or the type of information collected call for the availability of different tools for different circumstances.

Additionally, to regional, economic and social circumstances in each country, data collection modes may also differ. Even though countries might be interested in data collection by CAWI, the general economic situation of their NSI or the country’s internet penetration might not allow following this modern high technology oriented approach. Consequently, what
might be useful in one country is not feasible and advisable in other countries. Same applies on the kind of social survey.
Mixed mode data collection – Reasons for implementation

Which design is chosen, is closely linked with the purpose of the mixed mode design. If the major purpose is to decrease coverage or non-response error, another design should be chosen than if cost saving is the major purpose. In the first case, a concurrent design where respondents are given a choice of modes, or a consecutive design where the most expensive mode is presented first, may be the designated choice. This is the design that is used by the majority of countries with mixed mode surveys. If, on the other hand, costs are the driving factor, a consecutive design where the cheaper modes are presented first, is the logical choice. This design is also used by a number of countries who indicate that substantial cost savings can be achieved, up to 50% of the prior costs of fieldwork. Not all countries indicate that introducing a mixed mode design reduces costs. This again is a function of the design chosen, and the design prior to the introduction of the additional mode. Introduction of web will save costs, but other designs with other modes will not necessarily do so. While data collection costs mostly went down, other costs, like costs of sampling, data processing, case management and adjustment may increase as a result of the greater complexity of the mixed mode process. A number of countries therefore specified that some costs went up, while others went down. Some indicate that, although other costs may have gone up, this is easily compensated by the decrease in costs of data collection. Most countries foresee that within the next five years mixed mode data collection will become more profitable, especially with the introduction or the increased use of web surveys.

Addition to the this rather heterogeneous assessments on costs the approach on web first design results obviously in a slightly lower response rate than in the previous single mode design. On the other hand, there are indications that the concurrent design may be instrumental in achieving a slightly higher response rate. Firm conclusions are difficult to draw, however, in view of the non-experimental nature of the data, and the different designs and circumstances in the responding countries.

Web questionnaire development strategies

In theory, one of the basic decision NSIs have to take in the development of new CAWI instruments for mixed mode designs is between so-called unimode designs, on the one hand, and generalised mode designs (also called “mode-specific” designs) on the other. In principle, the majority of NSIs do adjust their questionnaires to a certain extent when transferring them into web questionnaires; in other words, they do not apply a strict unimode approach. However, the extent to which modifications are made is different for the various elements of questionnaire design (such as adjustment to the wording of question and answer categories, the wording and placement of instructions or the order of questions). This is also reflected in the results of the query: While placement and wording of instructions are subject to major adjustments in some instances, there are predominantly only slight adjustments to the wording of questions and answer categories.
IT demands

The implementation of CAWI brings with it a range of IT demands that go beyond the mere programming of web questionnaires. When new CAWI instruments are implemented in official statistics, questions on standardisation, data security, multiple mode data collection, case-management systems and cost-effectiveness have to be addressed, just to name a few important concerns. Thus, NSIs were asked to provide information on rather general issues such as (a) software packages they apply for designing web questionnaires, (b) the readiness of software-packages to adapt the original questionnaire programming (questionnaire data model) for different modes (i.e., readiness for mixed mode data collection) and (c) IT solutions to organise fieldwork (case management systems). Due to routing fewer than half of the NSIs responded to the questions.

With regard to the use of in-house or commercial products for programming electronic questionnaires, the replies were not quite even: Nine countries used commercial products, six in-house products. The major commercial software is Blaise. In another question, NSIs were requested to point out if the basic programming of web questionnaires (e.g., variables and value labels, wording of questions, filters, errors checks etc.) can be used for other modes too. Behind this question lies the idea of having one data model for different modes. Commercial products are better suited for various modes than in-house-products. The importance of the readiness of software packages for multiple mode data collection should not be underestimated. Countries that are just now starting discussions about appropriate tools to programme web questionnaires are advised to reflect on their preferable software also with regard to the feasibility of programming in different modes.

Future cooperation

The query also included a question on future support and co-operation among ESS members in the field of web surveys. Particularly popular is the suggestion to offer training courses for staff members of NSIs on how to design web questionnaires, followed by creating a handbook on recommended design for web questionnaires. Other suggested support measures also seem attractive to the members of the ESS, however, somewhat less so than the former measures: a programmed model web questionnaire; a list of recommended requirements when selecting a software package; or a list of recommended software packages.

3.1.2 Deliverables D2_3 to D2_7: Pretests of LFS Web Questionnaires

In the course of the project, all five partner countries – Germany, Finland, the Netherlands, Norway and the UK – have started developing web questionnaires for the Labour Force Survey. All countries used qualitative pretest methods, predominantly cognitive interviewing, in order to test their electronic questionnaires. Some countries carried out additional quantitative pilot studies. The Netherlands have already included web as part of their LFS mixed mode design since 2012 and have gathered a range of interesting data from the experience of having the web questionnaire in the field, as for example, paradata on web survey break-
The WP II Report, deliverable D2_8, thematically summarises findings from all national pretest reports. The following description of work and summary of results is structured topic by topic but features the abbreviations of the countries who contributed to the respective topics in brackets. This approach allows for a clear and comprehensible summary of results and at the same time offers information on which country contributed to which results of the project in WP II.

**Web questionnaire design: Findings on functionality & usability**

The testing of web questionnaire functionality and usability predominantly dealt with the following issues: the design of login and welcome pages as well as questionnaire length, instructions and explanations, navigation (particularly in household questionnaires), the don’t know option, error checks, grid questions and visual design in general. Another important goal was to test strategies in response to the challenge posed by an increasing amount of web survey respondents who want to complete web questionnaires on a mobile device. The most important findings with regards to these issues are summarised as follows.

**Welcome Page & Visual design** [Contributions from DE, NL, UK]

The welcome page and the general visual design are crucial factors in the motivation of respondents to complete web questionnaires. Due to the absence of interviewers, web questionnaire design is an important aspect in the communication with respondents. The issue of visual design is one of the highest priorities when converting an interviewer-administrated questionnaire to an online self-completion format. Inadequately displayed functionalities and the use of inappropriate wording of questions potentially increase burden during the completion process as well as having an effect on the quality of the information the respondent records.

Consider the following in the design of the welcome page:

- Make the text as short as possible
- Use bullet points where possible
- Implement some short information of the aim of the survey and use a hyperlink to provide additional information for those who are interested
- Move relevant information to specific screens in the questionnaire; for instance, the importance of the submission process should only be highlighted at the end of the questionnaire

**Instructions and Explanations** [Contributions from DE, FI, NL, NO, UK]

A general finding of pretests in all countries is that a substantial amount of respondents do not make use of instructions and explanations. This can be due to the fact that respondents feel they do not need additional information, fail to notice the information offered to them or that they try to avoid any additional efforts in the answer process that they consider unnec-
A good design of instructions, bringing across essential information to the right group of respondents is therefore crucial. The following recommendations could help to achieve this aim:

- Restrict the use of instructions and explanations to the most essential ones in order to lower respondents’ cognitive burden
- Consider using filter questions instead of instructions (make sure, however, that in mixed mode surveys, there is still functional equivalence between modes after changing the phrasing of questions in web)
- Show instructions of relevance for all respondents directly below the questions
- Consider embedding short instructions within question wording, particularly those which are relevant for all respondents
- Consider placing longer instructions and those only relevant for some respondents behind a hyperlink
- Use short bullet points in the phrasing of instructions and explanations instead of long sentences

**Navigation/Household approach** [Contributions from DE, NL, UK]

While automatic navigation by previous and next buttons is intuitive and easy to handle for respondents, additional features of navigation between household members or self-initiated corrections are a challenge for respondents. With regard to navigation between household members, the following conclusions could be made:

- Dashboards are the preferable option in order to easily navigate between household members within one questionnaire
- Additional tabs could make it easier to switch between household members; British tests yield tentative evidence that tabs would be welcomed by respondents, but further testing is necessary
- Navigation trees are another option to allow respondents to navigate between household members; however, operating a navigation tree is more demanding in terms of respondents’ motivation and skills than dashboards/tabs.

**Don’t know option (DK)** [Contributions from FI and NL, to some extent also DE]

The don’t know option is a highly relevant topic with regard to data quality. Based on testing, the following conclusions and recommendations could be made:

- The “hidden” DK option can function as an equivalent way to present DK in web questionnaires compared to the practice in CATI/CAPI to not explicitly read out the DK option but still allow for it as an answer option in some cases (however, quantitative research on this issue is needed)
If a household survey relies on proxy interviews, however, one might rather consider to use the visible DK option or allow respondents to move to the next question without a hard check in place.

In questions in which DK is a relevant response option, it should be possible to choose DK in all modes of a mixed mode survey design.

**Error Checks** [Contributions from DE, FI, NL, UK]

One of the advantages of web questionnaires is the possibility to integrate error checks into the questionnaire. Implausible or incomplete answers can be corrected during data entry by the respondents themselves. This may contribute to clean data sets right from the start of data collection. The web questionnaires subject to testing in this project proved to be fairly unproblematic with regard to error checks: Test respondents generally view error checks as a common feature of online forms and were open to respond to error messages. Error checks were problematic, however, in instances in which respondents did not understand why an error message occurred or how to respond to it. Based on testing, the following conclusions and recommendations could be made:

- If many respondents receive error messages on a specific question, this is a clear indicator that this question needs to be revised.
- The amount and type of error checks to implement in a web questionnaire depends on the number of questions, topics, whether the survey is obligatory or voluntary as well as whether proxy-interviews are allowed. It might be helpful to restrict the use of edit checks and hard checks to questions that are essential to the routing of the questionnaire. Soft checks and the hidden don't know option are useful additional tools for error checking.
- Soft checks can perform a function that is very similar to the hidden don't know option.
- Make sure that error messages are concise; error messages should clearly indicate the cause of error and how to proceed when correcting.

**Findings on different devices** [Contributions from DE, NO]

The topic of different devices is highly relevant since the variation in terms of device types, operative systems, screen resolutions and browsers has increased manifold in recent years. Striving towards technical stability and functional equivalence across as many technical configurations as possible is a great challenge. NSIs cannot fully control the computer settings of their respondents but must strive to adapt to the constellations most common among users.

- Always carry out systematic technical testing using a test protocol, covering the most common platforms, devices, browsers and screen resolutions. Check whether Web Content Accessibility (WCAG) guidelines are met: [http://www.w3.org/WAI/intro/wcag](http://www.w3.org/WAI/intro/wcag)
- Make survey-specific decisions on whether a strict mobile first approach is suitable for a specific survey. If grids or spread sheet style calculations are necessary, if much clarifying information should be available for all respondents, or if the questionnaire is quite long, mobile may not be the best format.
In case a sufficient quality of questionnaire display on smart phones cannot be guaranteed, it should be considered to recommend or force respondents who try completing the questionnaire on a smart phone to switch to a different device.

- SMS invitations should always be linked to mobile-friendly questionnaires.
- If not “mobile-friendly”, questionnaires should be at least sufficiently “finger-friendly” to facilitate completion on tablet devices.
- Know the possibilities and the limitations of the survey software package regarding the visual presentation of the content. If possible, use a software package that adapts layout well to different types of screens and devices (adaptive design).
- Be prepared for future developments. Software may be able to adapt questionnaires and content to different types of devices based on screen size rather than the handheld/non-handheld dichotomy. Questionnaires can thus be designed so that more information will be displayed on bigger handheld screens, and less on smaller handheld screens, with links to additional information, or even different sequences of questions. This is analogous to websites with PC, tablet and mobile versions of their content (see e.g. de Bruijne and Wijnant 2014). It will also make testing for mode effects and device effects more complex.

**Grid questions** [Contributions from DE, FI]

Generally speaking, pretesting showed satisfactory results in the evaluation of grids. Due to the factual nature of questions in the LFS, grids are generally less prone to data quality problems associated with grids in questionnaires on attitudes. Grids can help to enter data quickly and easily and might even increase data quality. The Finnish solution for capturing respondents’ actual weekly working hours allows for a detailed entry of data in a clear grid design. However, thorough design is requested. Problems can occur with grid questions when trying to design questionnaires for the use on handheld devices.

**Web questionnaire design: Findings on potentially problematic LFS variables in web**

[Contributions from DE, FI, NL, NO, UK]

The overarching challenge in the design of web questionnaires besides the functionality and usability of the instrument is to safeguard respondents’ understanding of a question as intended without the help of an interviewer. This is particularly important for two types of questions: (a) questions that are in themselves central for basic results and (b) questions that serve as filters for upcoming sequences of questions. In both cases the enormous potential of electronic questionnaires, such as automatic routing or error checks, also has limitations: Concepts must be understood correctly by the respondents and programming the follow-up of skips cannot help when it comes to comprehension problems. An appropriate design can support the transfer of concepts, for example by providing explanations and instructions in a visually appealing design, but only to a certain extent. Thus, testing the comprehension of selected questions is advisable.

1. Respondents in standard employment situations had fewer difficulties with completing the web questionnaire. Basically, the classification was easy to handle, but respond-
ents felt rather tired since the follow-up of questions seemed to be almost the same questions (e.g. distinction between main status, professional status and status in reference week (see MAINSTAT, WSTATOR, STAPRO), so that it was less motivating to fill in the questionnaire and might create scenarios of satisficing, which has been observed in the case of Germany. Furthermore, it was noticed, that not all respondents carefully read questions (as reading behaviour tends to be more scanning than reading the full sentence), which can have an impact on data quality.

2. Subgroups of employed respondents are more sensitive in entering correct data. These groups are: people in marginal employment or with several jobs, in a work on call contract or in parental-leave as well as self-employed, freelance-workers and temporarily employed. This is due to the fact that either the answer options they were provided with were perceived as not adequately corresponding with their actual working conditions, or generally the terminology did not fit to their situation and labelling of jobs. This result is in line with former tests conducted by Destatis and CBS. SSB Norway stated: “Many problems from the CATI questionnaire are reinforced in CAWI mode due to the absence of an interviewer for guidance and clarification”.

3. Questions on unemployment: The general questions on searching jobs by different activities and means has been understood by respondents. But, questions on work availability and duration of seeking a job are more difficult to answer. Additionally, the concept on the administrative term “being registered as unemployed in contrast to registered to search, but being still employed caused difficulties in the case of Germany.

4. Generally speaking, several problems from CATI/CAPI questionnaires are reinforced in CAWI due to the absence of an interviewer for guidance and clarification, when wording is unclear and concepts need to be explained. Thus, improvements to wording of questions and clarifications would be beneficial (and would also help interviewers).

5. While not a specific subject of testing, it seems plausible to assume that proxy interviews are also a threat to data quality in CAWI. Dutch pretests of LFS educational attainment questions for several modes, including web, caution against the use of proxy interviews in the LFS. Switching from household to individual web questionnaires, however, might come with sampling and technical problems.

Conclusions

The Dutch experience in running CAWI as part of their LFS mixed mode design and the insights from testing in the other four project partner countries show that in terms of functionality and usability web questionnaires can be employed to conduct social surveys. In this respect, CAWI can be viewed as an additional mode with particular advantages and disadvantages. The deliverables in WP II try to outline in detail the challenges that exist in designing web questionnaires for social surveys using the example of the Labour Force Survey.

Web surveys combine the advantages of computer-assisted questionnaires, such as automatic routing and edit checks, with the standardisation of self-completion questionnaires: There is no measurement error introduced by the presence and behaviour of interviewers.
The absence of interviewers in web questionnaires, however, is likely to also cause measurement error, observed by qualitative testing. Particular subgroups (e.g. several jobs, self-employed & marginal employed people) among the respondents seem to need the advice that interviewers provide with more complicated questions in the LFS and which they do not receive in web questionnaires, either because the necessary instructions are not available in web or because the respondents lack the motivation to receive help, for example by clicking on hyperlinked instructions. Getting respondents to read instructions and providing particular respondents with the help necessary for them is a remaining challenge in the design of web questionnaires.

3.2 WP III: Multimode Data Collection Design

Deliverables

- Draft Workplan
- Detailed Workplan
- State-of-the-art-report on the current use of multiple mode data collection in the EU Labour Force Survey
- Report on the organisation of multiple mode data collection
- Reports on mode effects
- Report on estimation approaches adjusting for mode effects and selection biases
- Summary work packages report

Work package III of the project dealt with mixed mode data collection, specifically with a view on the combination of web (CAWI) with other modes (CAPI, CATI, and / or paper). The focus was on mixed mode designs within one fieldwork period and one wave, although attention was also given to the use of web as a mode for the second wave of the LFS. There are three major topics in this ESSnet. Annex I of the Grant Agreement defined three sub-tasks within WP III. Sub-task 1 “organisation of mixed mode data collection” deals with mode strategies: which modes in which sequence, the timing of mode switches in view of the reference week, response rates and the measures to heighten web response, and who are the web respondents. Attention is also given to the important subject of case management systems: software systems that are able to support all modes and allow flexible transitions from one mode to another. Sub-task 2 is about mode effects: the phenomenon that substantive findings may be different, as a result of differences in mode specific coverage, response and measurement errors. And under sub-task 3 approaches to estimation and adjustment were discussed: given that there are mode effects, can we adjust for them, and how should that be performed?

With preliminary results towards the beginning of the project indicating that the issue of mode effects might not be as severe as expected, some of the emphasis on sub-task 2 was shifted to other issues, in particularly to the topic of case-management systems in sub-task 1.
3.2.1 Sub-task 1: Organisation of multiple mode data collection

All partners contributed to the topic of mixed mode data collection, and most subjects were covered by more than one partner, so that findings could be compared. A summary of the findings is written by Statistics Norway in D3_4.

Mode strategies

The following conclusion could be drawn with regard to the questions of how to mix modes within and between waves:

- Which design is chosen, is closely linked with the purpose of the mixed mode design and the organisational, legal, institutional and cultural context. If the purpose is to decrease coverage or non-response error, then either a concurrent design where respondents are given a choice of modes or a consecutive design where the most expensive mode is presented first are the options. If however the purpose is to reduce costs, then a consecutive design with cheapest mode first is the best option.
- Design decisions need to be evidence-based as far as possible, taking into account different aspects of data quality, response burden and costs. As the survey methodological, practical, technological, legal and other framework conditions will differ from country to country and NSI to NSI, it is difficult to give very detailed advice.
- Where appropriate, adaptive or responsive designs should be considered, so that modes are allocated to some (groups of) people to minimise measurement bias, response, and/or costs. Further research on this topic is necessary.

Reference week in a mixed mode design

With regard to the reference week in the LFS, it can be said that the further away from the reference week the interview is held, the higher the chance that measurement error is introduced. A (consecutive) mixed mode design will need to be performed with this time constraint in mind. Flexible transition from one mode to another is a prerequisite, and with that IT systems that support that flexibility.

Web response rates

Although more knowledge on this subject is necessary, from the experience thus far, we recommend:

- Do not make advance letters too ‘commercial-looking’.
- Warn respondents in the advance letter and reminder(s) that they will be contacted by an interviewer if they do not respond in web. The finding that this increases web response has been replicated by several countries.
- Study the effect of the arrival time of the letter. Statistics Netherlands makes sure that the advance letters arrive on a Friday, making it possible for respondents to complete the survey online during the weekend. This finding is replicated in the UK, but should be replicated further to see if this can be generalised.
Formulate instructions concerning web access very clearly and perform usability tests.

The accessibility and usability of CAW questionnaires should accommodate persons with low computer skills.

Send reminders and in the case of web surveys much closer to the original invitation (after some days). Even within very short fieldwork periods. More research should be performed as to the timing of reminders.

Study if sending reminders has negative consequences for later wave participation.

Always include login information with CAWI reminder notifications.

If notifications are sent via text messaging (SMS), the questionnaire should be developed using a “mobile first” approach.

Apart from the aspects concerning communication with the respondent (letters, reminders, incentives), the look and feel of the questionnaire (the subject of WPII) needs to be inviting.

Finally, the technical aspect of web servers is of particular importance: servers need to be secure and available at all times.

The effectiveness of incentives should be carefully evaluated in each situation.

Who are the web respondents?

For the time being, web cannot be the only mode, as the response rates are low and biased. Mixed mode designs on the other hand show response rates and representativeness that are similar to CAPI. An important finding is that web shows unstable response rates over months of data collection. That is particularly problematic if there are measurement differences between the modes. If shares of modes of response vary over time, substantive findings may vary too, as a result of these fluctuations. It may therefore be desirable to stabilize relative mode use, both by fieldwork and by calibration.

Costs in mixed mode data collection

An important consideration for many countries in introducing mixed mode data collection is the cost of fieldwork. The information on this subject derives from the query. NSIs indicated how costs of fieldwork developed after the introduction of a mixed mode design. Most countries indicated that fieldwork costs decreased after the introduction of mixed mode data collection, sometimes by significant amounts. For example, fieldwork costs in the Netherlands diminished with more than 50% when a CAPI design was changed for a consecutive web - CATI - CAPI design. Others however indicated that costs became higher or remained the same. The costs development is essentially a factor of the initial design. For example, in Italy, where a paper questionnaire was replaced by a CATI/CAPI mixed mode design, costs increased.

Case Management

Designing an efficient case management system for one mode is complicated in itself, but getting the systems to communicate, which is necessary in mixed mode designs adds substantially to the complications. A number of NSIs are presently in the process of developing
new case management systems for mixed mode data collection (e.g., Norway, Austria, the Netherlands, the UK). Some develop the system in-house, others try to adapt OTS software to their purpose. A list of requirements that the partners of the project formulated is available in D3_4.

3.2.2 Sub-task 2: Measurement issues (D3_5_1 to D3_5_5)

Five deliverables deal with the topic of mode effects. First, there is an overview report by Destatis on the definition, identification and analysis of mode effects (D3_5_1). The deliverable gives an extensive overview of several definitions of ‘mode’, and the influence of the communication channel, the contacting process, the degree of involvement of the interviewer and the respondents, and the degree of computer assistance. When comparing the system of data collection, mode differences can be caused by differences in coverage between modes, mode specific non-response, as well as measurement differences. The latter are the so called ‘pure’ mode effect. The remainder of the report focusses on these mode specific measurement effects.

Based on this report, three deliverables analyse experimental data from mixed mode surveys for mode effects. Deliverable D3_5_2, also by Destatis, is a secondary analysis of a split-sample experiment called “Quantification of the Methodological Effects of different Data Collection Instruments on the Data Quality in the Labour Force Survey” (Q-MED / LFS), which was carried out by the Federal Statistical Office together with the Statistical Offices in several Federal States in Germany in 2009 and 2010. Q-MED / LFS includes data collection from four modes: CAPI, CATI, PAP and CAWI.

Research by Statistics Netherlands can be found in deliverables D3_5_3 and D3_5_4. The studies are based on a comparison of parallel runs of a mixed mode (web, CATI, CAPI) LFS with the traditional CAPI design. In addition, an experiment compared LFS and other variables in a random allocation of web, CATI, CAPI and paper-and-pencil. The first round of random allocation was followed by a re-interview round in (mostly) CAPI. The experiment was set up to be able to decompose mode effects into three components: mode-specific coverage bias, mode-specific nonresponse bias and mode-specific measurement bias.

In a pilot study of their newly developed LFS web questionnaire, Statistics Finland compared CAWI to the traditional CATI questionnaire of the LFS (deliverable D3_5_5). They found that there were no significant mode effects on employment status between the two modes. CAWI respondents reported a lower number of hours worked in the reference week. The difference could be diminished by adapting the question in CAWI, and thus essentially offering a different question in the two modes.

Conclusions on mode effects

There is evidence from this ESSnet and other findings that measurement errors are an important source of differences between modes in some but not all surveys. For the LFS the
differences between modes (mail, web, CATI, CAPI) can mostly be explained with common weighting variables. This finding is replicated in the Netherlands, Germany and Finland. However, this is not always the case: large mode effects in the Dutch Safety Monitor have led to a restriction in the modes to web and paper, that is, non-interviewer modes. Likewise, in the Finnish Consumer Sentiments Survey large mode differences led to the decision not to introduce web data collection in this survey. Research on the British Opinions Survey showed that mode effects can be explained, but in order to do that, additional auxiliary variables are necessary, more than are standardly available for weighting.

Experiments and case studies show that mode effects should be taken seriously; however, it is hardly possible to determine for each survey and each mode combination whether mode effects are of importance. We recommend developing rules of thumb for choices in the survey design: is every sample unit subjected to the same modes, will we be able to adjust afterwards, can we stabilize findings? These choices depend on the relative amount of selection and measurement effects, and on the choice of benchmark (e.g., CAPI, or a mix of modes).

3.2.3 Sub-task 3: Data processing and estimation under multiple mode data collection

When the composition of the response obtained in a mixed-mode data collection strategy can fluctuate – between subpopulation or between time periods – comparability of the resulting statistics may be compromised. If the modes exhibit relative measurement errors for a survey variable, then these measurement errors constitute part of the final estimate for that variable, as variations seen in the mode composition will manifest themselves as fluctuations in resulting LFS estimates, a situation that is to be avoided. The deliverables written for sub-task 3 of WP III investigate the effect on the estimates of stabilizing the mode composition.

The project dealt with adjustment methods for mode-dependent measurement errors and contains two contributions. Deliverable D3_6_1 by CBS applies the approaches presented in Buelens and van den Brakel\(^\text{11}\) and Suzer-Gurtekin\(^\text{12}\) to Dutch LFS data. And deliverable D3_6_2 by ONS attempts to extend the approach by Kim\(^\text{13}\) to categorical variables where one of the modes suffers from measurement bias. This research applies the method to data collected in a pilot with a web sample was run in parallel with the main face-to-face ONS Opinions Survey in 2010. In the CBS contribution the objective is to stabilise the potential

\(^\text{13}\) Kim, J-K (2013). An imputation approach for analysing mixed-mode surveys, Presentation at the ESRA conference, July 2013, Ljubljana, Slovenia.
mode-specific measurement error bias in the estimates over time and across subpopulation groups, whereas the ONS contribution attempts to remove any potential measurement error bias in the estimates of all subpopulation groups.

In conclusion, we have seen that methods for adjusting for measurement errors can be developed but they have limitations and rely on assumptions that are difficult to verify. The method in Buelens and van den Brakel (2014) shows promise and is relatively easy to implement, but it only addresses the problem partially since the bias is not removed, which may be a concern to producers of official statistics. It is only through careful questionnaire design and pre-testing of questionnaires in mixed mode settings that relative measurement effects can be avoided and reduced, and that NSIs may hope to produce estimates that are close to the truth.

The summary report of work package III can be found in in D3_7.

3.3 WP IV: Dissemination

Many countries consider or plan the introduction of web data collection in social surveys in the near future. While national circumstances in each country are unique, many challenges faced by NSIs are similar. A comprehensive exchange of knowledge, experiences and best practices among NSIs is therefore very helpful for countries planning to introduce or increasingly rely on multiple mode and web data collection. Many of the issues are not only relevant in the area of official statistics but are also subject of academic research. Therefore the ESSnet DCSS project therefore put emphasis on dissemination.

Three sub-tasks were defined in Annex I of the Grant Agreement to realise good dissemination of the project activities: 1) Publishing outputs of the project on the Cros-Portal website (formerly “ESSnet Portal”); 2) presenting the project objectives and outputs at relevant academic conferences and workshops of official statisticians; and 3) organising a public workshop on the topic of multiple mode and web data collection towards the end of the project.

3.3.1 Sub-task 1: Cros-Portal

The deliverables of the project, additional documents and presentations are publicly available on the Cros-Portal website of the ESSnet DCSS (http://www.cros-portal.eu/content/data-collection). The website allows for a straightforward access of the most relevant outputs of the projects under the link http://www.cros-portal.eu/content/b-main-reports and a clear overview of any other outputs available for download. In October 2014, the number of website visits reached the number of 5,000. Additionally, documents of meetings and minutes from project meetings and management tasks are provided only to a selective group (internal access).
3.3.2 Sub-Task 2: Presentations

Presentations have been given throughout the whole project period and to a range of different audiences. After the project’s running time, the results will be presented at the LAMAS meeting at Eurostat in December 2014. Presentations on the project results will also be given at the next Internet Survey Methodology Workshop (2014) and at the next NTTS conference in Brussels (2015). There will be an entire session at ESRA conference in 2015 on the project topics chaired by the project coordinator and the leader of WP III. The first three presentations depicted in the table below have been mainly on the outline of the project and on the objectives. From 2013 onwards, first results could be presented and discussed. The most successful dissemination action was the final workshop, covered in sub-task 3 of this work package.

Overview of all presentations as stipulated in the contract

<table>
<thead>
<tr>
<th>No.</th>
<th>Deliverable name</th>
<th>Type</th>
<th>Date/audience</th>
<th>Responsible partners</th>
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<td>D4_1</td>
<td>UN/ECE Seminar on New Frontiers for Statistical Data Collection, Geneva</td>
<td>Presentation</td>
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<td>D4_5</td>
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<td>D4_6</td>
<td>Verbal reports to LAMAS at Eurostat</td>
<td>Phone, face-to-face</td>
<td>2013/2014, statisticians of NSIs</td>
<td>DE/NL</td>
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<td>D4_7</td>
<td>Final Workshop Wiesbaden</td>
<td>Presentation</td>
<td>NSIs and research community</td>
<td>DE</td>
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### Overview of additional deliverables (not covered in the contract)

<table>
<thead>
<tr>
<th>No.</th>
<th>Conference/Meeting</th>
<th>Type</th>
<th>Date/audience</th>
<th>Responsible partners</th>
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<tr>
<td>A4_1</td>
<td>ESSnet Workshop Rome</td>
<td>Presentation</td>
<td>Dec 2012, statisticians of NSIs</td>
<td>DE</td>
</tr>
<tr>
<td>A4_2</td>
<td>NTTS (paper)</td>
<td>poster</td>
<td>Mar 2013</td>
<td>NL</td>
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<tr>
<td>A4_3</td>
<td>UN/ECE Seminar on Statistical data Collection, Geneva</td>
<td>Presentation</td>
<td>Sep 2013, statisticians of NSIs</td>
<td>DE</td>
</tr>
<tr>
<td>A4_4</td>
<td>Statistische Woche (Berlin)</td>
<td>Presentation</td>
<td>Sep 2013, statisticians of NSIs &amp; other institutions</td>
<td>DE</td>
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<tr>
<td>A4_5</td>
<td>ESSnet Workshop Valencia</td>
<td>Presentation</td>
<td>Jan 2014, statisticians of NSIs</td>
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<td>A4_6</td>
<td>European Congress of Methodology, Utrecht</td>
<td>Presentation</td>
<td>Jul 2014, research community</td>
<td>DE</td>
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</table>

#### 3.3.3 Sub-Task 3: ESSnet DCSS Workshop

Towards the end of the project period, on 4/5 September 2014, Destatis organised and hosted the Workshop "Data Collection for Social Surveys using Multiple Modes". Aims of the event were to present the findings of the projects but to also hear from speakers from NSIs outside the project. Furthermore, two leading researchers in the field of web surveys, Mick Couper (University of Michigan) and Gerry Nicholaas (Ipsos MORI, UK) participated in the workshop.

A total of 95 participants from 26 national statistical offices from the ESS but also from third countries, such as the US or Canada, attended the event. The workshop allowed for a broad exchange of experiences, plans and approaches with regard to the introduction of web and mixed mode data collection in social statistics. The potential benefits and drawbacks were critically discussed. In a concluding panel discussion (chaired by Eurostat), representatives of NSIs as well as researchers outside the realm of official statistics talked about the upcoming challenges and the need for further research in the field of web and mixed mode data collection. There was a general agreement among the panelists and workshop participants that an on-going exchange on these important matters of modernisation of social statistics is important.

The workshop programme, including abstracts and slides of all presentations, can be found at: [https://www.destatis.de/EN/AboutUs/Events/ESSnet/Agenda.html](https://www.destatis.de/EN/AboutUs/Events/ESSnet/Agenda.html)
3.4 Potential for Follow-up Projects

The extended use of multiple mode data collection including CAWI for social surveys has been considered part of the strategy to modernise European social statistics.\(^\text{14}\) In fact, the query among NSIs in the ESS has shown that while web questionnaires are still rarely used in population surveys in official statistics at this point in time, mixed mode data collection is already reality in a lot of countries, and the near future will see the addition of web to mixed mode designs in a number of European countries. 14 out of 24 statistical offices state in 2013 that they have concrete plans to add web in social surveys within the following five years (see results of the query).

ESSnet cooperation on web and mixed mode data collection

A continued European exchange and further measures of cooperation within the ESS will be an important aspect of the on-going efforts to modernise European social statistics. The findings from the ESSnet DCSS project provide a good platform for future work on the issues of web and mixed mode data collection in social surveys.

In 2014, we are still at the beginning of a continuing move towards web and mixed mode data collection in official statistics. Three leading questions of the project were:

- How to best design web questionnaires for mixed mode social surveys?
- How to best organise mixed mode data collection?
- How to best measure and adjust for mode effects?

These questions defy simple answers, and the answers provided by the project do not once and for all settle these complex issues in mixed mode data collection. However, the current results do serve as a helpful support for NSIs starting the process of designing web questionnaires for social surveys and moving to more complex mixed mode data collection designs. While the national contexts in which NSIs operate are too unique to provide for universal recommendations for the ESS, the project reports detail which questions NSIs need to ask themselves before advancing in the area of web and mixed mode data collection and they show different courses of action that should be taken by NSIs in particular circumstances. The ESSnet DCSS itself showed that a close exchange of experiences and plans between European NSIs with regard to the advancement of web and mixed mode data collection in social surveys is a very fertile undertaking. Yet every country needs to thoroughly test their particular designs themselves.

Future challenges and the modernisation of social statistics

The introduction of mixed mode data collection including CAWI raises challenges that go beyond the mere design of good web questionnaires. It became clear during the work on the

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project that thinking about strategies to conduct web and mixed mode data collection inevitably means to also think about other connected issues in the modernisation of social statistics. When implementing the CAWI instrument as an additional mode it became apparent, that a lot of other issues with regard to the entire statistical production process in social statistics need to be reconsidered.

The topic of case management systems for mixed mode designs, for example, raises questions that go beyond the mere design of appropriate questionnaire tools but concerns the whole IT system behind data collection. As the organisation of fieldwork in mixed mode surveys become more complex, the demands on the IT environment also grow.

Web questionnaires in social surveys should be designed for a mixed mode environment. Even though the programming of web questionnaires may start from scratch, the design has a lot of features to meet which have been applied in other modes in the past. The pretest reports written for this project discuss the practical implications behind the theoretical discussions on different strategies to create web questionnaires for mixed mode surveys (uni-mode vs. specified mode designs). There seems to be an emerging debate on the potential benefits of moving to a uniform questionnaire design in mixed mode including CATI, CAPI and CAWI. Instead of following the specified mode idea of individually adapting questionnaires for different modes (potentially also using different software packages for the questionnaire design of different modes), a radically different approach would be to program one common electronic questionnaire for CAWI, CATI and CAPI, might be more effective, but has certain drawbacks which need thoroughly discussion. Web questionnaires could take over the role of a model questionnaire in this scenario, being then also used for other form of computer-assisted interviewing. While this approach might help to curb costs in the design and testing of questionnaires, it is an open question whether electronic questionnaires designed for CAWI could be employed in the field for CATI and CAPI without any complications.

In the discussion on adequate questionnaire design for the various modes the challenge of web questionnaire display on mobile devices should not be forgotten. CAWI for mobile devices could be considered a survey mode in itself, with particular demands for questionnaire development that are different from all other modes.

Software choices are important in setting the course for an efficient organisation of the programming of computer-assisted survey modes. When to decide on a software package to programme web questionnaires, it is advisable to check also if the software can support other modes at the same time or can at least make use of the same data base in which question wording, answering categories, variables, values, skips or error checks are stored. This function is particular important when the organisation of surveys moves into a modularised direction, i.e. when the content of surveys is organised in a modular architecture.

**Potential for future cooperation**

Many countries consider or plan the introduction of web data collection in social surveys in the near future. While national circumstances in each country are unique, many challenges faced by NSIs are similar. A comprehensive exchange of knowledge, experiences and best
practices among NSIs is therefore very helpful for countries planning to introduce or increasingly rely on multiple mode and web data collection. In the query on the current state of data collection for social surveys in the ESS, NSIs stated that there is a demand for future cooperation and assistance within the ESS on web questionnaire design and the organisation of mixed mode data collection.

According to the new policy on ESSnet projects, projects are supposed to support the implementation of the ESS Vision 2020, which goes back to May 2012, when the ESSC adopted a new ESSnet strategy with two main features:

- The new “top down” vision implementation strand of the ESSnet program (the strategy continues to allow “bottom up” projects, thus providing for some relatively small actions in specific domains).
- The emphasis on the sustainability of results of ESSnet projects once they are finished through Centres of Excellence.

Future ESSnet projects will follow this new vision. The chief aim is to decrease the amount of projects and to run more concrete work packages under one roof. This shall lead to better coordination of projects, control, fewer overlaps among projects and an increased use of synergies. Eurostat further states that in this context, two overarching projects have been considered to be sufficiently developed to seek for the opinion of the DIME in October 2014 by written consultation:

- Sharing common functionalities in the ESS
- Quality of multisource statistics

It is conceivable that topics discussed within the ESSnet DCSS can be continued under the roof of the two projects mentioned above. Links could be made with regard to many overarching topics, for example, technical and software developments (software requirements for web questionnaire design and case-management systems) or matters of data collection strategies in the environment of multisource statistics (i.e. the future combination of registers and frames while supplementary using different data collection modes), just to name of few.

In more concrete terms, the following potential forms of follow-up cooperation on the topic of web and mixed mode data collection were discussed at the concluding workshop of the ESSnet DCSS:

- To carry out annual workshops to exchange plans and experiences on web and mixed mode data collection
- To establish a Centre of Competence on web and mixed mode data collection

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To update the “Handbook of Recommended Practices for Questionnaire Development and Testing in the European Statistical System” including detailed advice on the design of web questionnaires for mixed mode surveys

To support training seminars on the design web and mixed mode data collection

Another perspective would be to focus on particular sub-topics in the field of web and mixed mode data collection that demand further research and exchange. Such research topics could, for example, be:

- Measures to increase web response
- Adjustment for mode effects
- Web questionnaires for mobile devices
- Decision trees on selection of appropriate mixed-mode strategies
- Quality aspects regarding proxy interviews
- Dependent interviewing
- Coding variables, such as occupation and economic sector
## 4. Final Deliverables Table

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<th>No.</th>
<th>Work package/deliverable name</th>
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<th>Actual delivery date</th>
<th>Comments</th>
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<td>Review on currently applied LFS CAWI instruments in ESS</td>
<td>DE</td>
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<td>↓ t +19</td>
<td>Preparation and implementation took considerably longer than expected due to the following reasons: - Changes to the conceptual framework of the questionnaire (integrating both questions of WP II and WPIII) - Delayed search for adequate survey software: IPM, the software offered by Eurostat, did not provide all functions required (e. g. complex skips); the query was finally programmed at short notice in Blaise 5 at CBS Netherlands - Data collection phase: Measures to heighten the response rate among NSI lead to delays - Finally, processing and analysis of data as well as writing the report took longer than expected</td>
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<td>Due to high workloads in partner NSIs at the time, short delays were accepted to safeguard high quality of the reports</td>
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<td>↓23</td>
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<td>DE</td>
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## Additional deliverables (not covered by contract)

<table>
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<th>No.</th>
<th>Conference/Meeting</th>
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<th>Date</th>
<th>Comments</th>
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<td>ESSnet Workshop Rome</td>
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<td>UN/ECE Seminar on Statistical data Collection, Geneva</td>
<td>DE</td>
<td>Sep 2013</td>
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<td>Statistische Woche (Berlin)</td>
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5. Project Management

As project coordinator, Destatis coordinated, structured and monitored the tasks carried out by the consortium. This work included the organisation and documentation of meetings, telephone conferences, preparation of agendas, writing of minutes, communication with partners and with Eurostat, participation at conferences representing the project and all administrative tasks with regard to the budget, travel and invoices. Finally the web page at http://www.cros-portal.eu/content/data-collection was created by Destatis and the intermediary and the final report of the ESSnet DCSS project were written and compiled by Destatis.

Collaborative network management tasks and achievements:

- For a comprehensive list of contact persons see annex 5 (Technical report).
- Communication within the consortium was managed predominantly via e-mail, phone calls and telephone conferences.
- Bilateral meetings between the two work package leaders took place in Bonn (autumn 2012, autumn 2013), Ljubljana (summer 2013) and Heerlen (2013).
6. Dissemination Actions towards the ESS

The project coordinator represented the ESSnet DCSS at relevant conferences and workshops throughout the entire project time. There were several additional presentations of the project at events which were not covered by the contract. The dissemination efforts of the ESSnet DCSS started at the beginning of the project when only the project objectives and some preliminary results could be presented. This strategy of making the project visible from the start and establishing contacts proved to be successful: At the end of the project, the workshop was met with a considerable interest which was reflected by the number of 95 participants from 26 different NSIs.

In August 2014, the number of visits of the DCSS website reached more than 5,000. Over the course of the project, a large network of NSIs, researchers and other interested institutions could be established. This network holds a lot of potential for further collaboration and exchange of knowledge. It is now critical to find ways to maintain this network and to support NSIs in their continued continue work on these topics. Only then the dissemination of the project results becomes sustainable.

The table provides an overview of all presentations stipulated in the contract. All presentations slides are available at: [http://www.cros-portal.eu/content/data-collection](http://www.cros-portal.eu/content/data-collection)

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<td>DE</td>
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7. Annex

7.1 Query report
7.2 WPII Final report
7.3 WPIII Final report
7.4 Agenda Essnet Workshop, Wiesbaden 2014
7.5 Complete list of contact persons