Innovative Tools for measuring Indoor Air Quality

Fields marked with * are mandatory.

INTRODUCTION

This CSPA analysis is based on a questionnaire developed for TUS and HBO. As such, many of the questions are not applicable to the situation of WP2.4. The specific questions where this is the case will be marked as such.

1 AN OVERVIEW OF YOUR ORGANISATION

We would like to know more about your organization and YOU - the person responsible for THIS questionnaire within your organisation
(even though more than one person will contribute to the answers).

*1.1 Full name
Annemieke Luiten

*1.2 Function
Data collection methodologist

*1.3 Email address
a.luiten@cbs.nl

*1.4 Organisation
Official name of your organisation and English translation (if applies)
Centraal Bureau voor de Statistiek (CBS)/ Statistics Netherlands

1.5 Department
Research and Development

1.6 Unit
Methodology

*1.7 Country
The Netherlands

1.8 Head of department/unit responsible for the survey (EHIS, EU-SILC, Housing Survey)

Name of the person

Jos Schiepers (Social Statistics Division)

1.9 **Which of the surveys is the main focus of the tool?**

- not determined yet, but EHIS, EU-SILC, the Housing Survey, are all likely candidates.
-
-

(Q 1.10 to 1.15 not relevant here)

2 IDENTIFICATION OF THE TOOL

This part of the questionnaire deals with tools that your organisation is already using or developing on its own, or in partnership with another organisation. If you are using a ready-made purchase tool and you are not able to answer to some of the questions, please let us know who developed the tool and they will be invited to fill out the questionnaire. If the tool is in Conceptual/Design phase you might opt for a shorter version of this questionnaire focusing on early stage projects. Let us know if you wish so.

By **tool** we mean any software platform that combines both front-end and back-end applications and their functionalities.

2.1 Name, ownership, development phase

* 2.1.1 **Is your organisation using or developing (on its own or in partnership with another entity) a tool able to collect accelerometer data household budget/time use data online?**

- We are using our own tool (we are service owners of the tool)
- We are developing our own tool (we are in-house developers of the tool)
- We are using a tool developed by - or in partnership with - others (public organisation, government, university, private company, ...) (BUT, see main text, the measurements are not online)
- We are developing a tool in partnership with others (public organisation, government, university, private company, ...)
- Other (please specify below)

* 2.1.2 If Other – please specify

* 2.1.3 **What is the name of this tool?**

uHoo air

* 2.1.4 **What is the aim of this tool?**

What was the original business need that triggered the tool's development? What is the reason for using the tool?

An evaluation of (subjective) indoor air quality is the topic of quite some questions in various surveys. The objective basis of which is impossible to gauge for respondents, but for the use of sensore. This particulat

device measures the following aspects of indoor air quality, i.e., CO2, No2, PM2.5, CO, temperature, humidity and TVOC) Additionally a virus risk warning (based on the combination of temperature and humidity).

* 2.1.5 **Can you provide a short description of the main function(s) of this tool?**

Measurement of aspects of indoor air quality (see above). Feedback by SMS to respondents of critical values, constant feedback to respondents of all values if logged on to app, monthly overview of values plus interpretation of those.

2.1.6 **Which part(s) of the Relevant questionnaires are addressed by this tool?**

~~Diary (whole or parts of it) and~~/or Questionnaire (whole or parts of it)

- ☐ A ~~part of the Diary~~
- ☐ The whole Diary
- ☐ A part of the Questionnaire
- ☐ The whole Questionnaire

* 2.1.7 **Briefly describe the outcomes of the tool**

- ☐ Data collection
- ☐ Exchange of data - API
- ☐ Statistical production
- ☐ Research
- ☐ Visualisation
- ☐ Other - please specify below
- ☐ Don't know (I do know what comes out of the tool, but do not know how to classify that into these categories)

No answer

* 2.1.8 If Other – please specify

* 2.1.9 **Are there any dependencies with other tools and sources?**

e.g. Matching and Data Linking Service

- ☐ Yes, the tool receives data from other existing sources
- ☐ Yes, the tool depends on the results of other tools
- ☐ Yes, the results of the tool are used by another tool
- ☐ Yes, results of the tool create a new data source used for further processing
- ☐ Other - please specify below
- ☐ Don't know
- ☐ No answer

* 2.1.10 If the options "...receives data from other existing sources" or "Other" are selected please provide a brief explanation

* 2.1.11 **Is there any documentation available about this tool?**

- [ ] Yes, online guidelines
- [ ] Yes, online articles
- [ ] Yes, in the app store
- [ ] Yes, other documentation
- [ ] No
- [ ] Don't now
- [ ] No nswer

2.1.12 **If Yes please provide the link(s) below.** links to online guidelines, and/or online articles, and/or to the app stores, etc.

https://apps.apple.com/us/app/uhoo/id1084953997

https://play.google.com/store/apps/details?id=com.uhooair&hl=en&pcampaignid=pcampaignidMKT-Other-global-all-co-prtnr-py-PartBadge-Mar2515-1

2.1.13 **If it is possible to share the documentation, would you please upload the file**

The maximum file size is 1 MB

Baldelli, A., (2021). Evaluation of a low-cost multi-channel monitor for indoor air quality through a novel, low-cost, and reproducible platform, *Measurement: Sensors, 17*, https://doi.org/10.1016/j.measen.2021.100059.

* 2.1.14 **Please indicate the stage of development of this tool.**

- ( ) Development phase
- ( ) Test phase
- ( ) Pilot phase
- ( ) Data collection phase - release maintenance
- ( ) Don’t now
- ( ) No nswer

* 2.1.15 **Who has the Intellectual Property ownership of the tool?**

Intellectual property refers to creations of the mind and is divided into two categories: Industrial Property (includes patents for inventions, trademarks, industrial designs and geographical indications) and Copyright for artistic work.

uHoo, Limited, Hong Kong, China

2.1.16 **Is this tool patented or protected by other property protection rights (if applicable)?**

Patent is the exclusive right granted by a government to an inventor to manufacture, use, or sell an invention for a certain number of years.

Other protection rights: for example i-depot in Benelux

Proprietary tool and software by uHoo

* 2.1.17 **Which of the following elements of the data collection design are part of the tool?**

at least 1 choice(s)

Automated communication: providing automated feedback, instructions and alerts to the respondents in a form of SMS, e-mail etc.

Fully prepared database: download of a database ready for statistical analysis (in .xlsx, .csv., .sav, … formats)

Online calibration procedure: an online module in order to define weights based on defined parameters (population numbers on age, gender, education; numbers of days completed, dispersion of the year, …)

Online data analysis: a statistical software package that makes it possible to analyse the data from within the tool (e.g. R)

- [ ] Online questionnaire
- [ ] Online diary
- [ ] Smartphone ~~diary~~ app with online data collection
- [ ] Automatic communication
- [ ] Online invitation procedure
- [ ] Automatic data collection flow
- [ ] Online follow-up/overview of fieldwork
- [ ] Fully prepared database
- [ ] Online calibration procedure
- [ ] Complete metadata information
- [ ] Online data analysis
- [ ] Don't know
- [ ] No answer

2.2&2.3 Parameters in an online time use / HBO diary

NOT APPLICABLE

* 2.3.1 ~~**Which of the parameters listed below are included in the tool in relation to the online household budget diary? These parameters can be changed/modified depending on the data collection goals.**~~

* 2.3.2 ~~**What registration method(s) are included in the online household budget diary? If you choose multiple methods, it means that a combination of these methods can be provided to the respondent.**~~ *at least 1 choice(s)*

* 2.3.4 ~~**Via which (combination of) method(s) can the respondent fill in the activity in the online diary?**~~

3 NON-TECHNICAL FEATURES OF THE TOOL

In this Section of the questionnaire we will cover the following topics:

Business goal(s) of the tool; Validition; Accessibility and Usability; Assistance and Feedback to the respondent; Fieldwork monitoring.

3.1 Business goals

* 3.1.1 **What is the focus of the tool?** *at least 1 choice(s)*

- [ ] General population data collection
- [ ] Integration broader statistical network
- [ ] Government policy research (unpaid work, gender equality, transportation, leisure, sport …)
- [ ] Multi-disciplinary data collection/research
- [ ] Target specific data collection
- [ ] Experimental data collection – Test environment *
- [ ] Other – please specify below
- [ ] Don't know
- [ ] No answer

* For the moment, but the possibilities of implementation in general population data collection is subject of study.

* 3.1.3 **What are the business goals of the tool?** *at least 1 choice(s)*

Scalability is the capability of a system, network, or process to handle a growing amount of work, or its potential to be enlarged to accommodate that growth.

- [ ] In-house data collection
- [ ] Scalability – governance tool
- [ ] Product to others
- [ ] Service to others (Software as a Service - SaaS)
- [ ] Don't now
- [ ] No nswer

* 3.1.4 **Who are the stakeholders?** *at least 1 choice(s)*

A **stakeholder** is an organization or a person with an (in) direct (economic, policy, research, etc.) benefit to the output of a business process/function.

- [ ] My own organisation
- [ ] (Other) NSIs
- [ ] Other governmental structures (international, regional, city, community level)
- [ ] NGOs
- [ ] Academic
- [ ] Commercial
- [ ] Other – please specify below
- [ ] Don't know
- [ ] No answer

3.2 Validation

* 3.2.1 **What validation checks are covered in the tool?** *at least 1 choice(s)*

Data validation is the process of monitoring the results of data compilation and ensuring the quality of the statistical results. Data validation specifies methods and processes for assessing statistical data, and how the results of the assessments are monitored and made available to improve statistical processes.

Administrative validation: a check to ensure that general profile, contact information, etc. has been provided.

Input validation - questionnaire: a check to validate that user input and responses are in right format (e.g. numbers, dates, URLs, etc.).

Input validation - diary: a check that validates whether a diary is filled in.
Process validation: a critical part of quality assurance procedures to confirm whether the process is effectively controlling the quality of the data collected.
Database validation: automatic check to ensure that the database structures are not corrupt and the data entered is sensible and feasible.
Security validation: decreasing the likelihood of fraud, e.g. CAPTCHA, SMS verification, requiring login, etc.

- ☐ Administrative validation (profile, contact information, …)
- ☐ Input validation – questionnaire
- ☐ Input validation – diary
- ☐ Process validation
- ☐ Database validation
- ☐ Security validation
- ☐ Don't
- ☐ know

*3.2.2 **How does the tool take into account validity aspects?** *at least 1 choice(s)*

- ☐ There is no quality control (e.g validation rules management, execution of validation rules, reports on processed data, …)
- ☐ Via a dashboard (response rates, period overview, state overview, validation reports, validation rules editor, ...)
- ☐ Via paradata (start date, end date, registration time, device, ...)
- ☐ Via quality parameters (of registered activities)
- ☐ Via validation procedures automatically executed during registration
- ☐ Other – please specify below
- ☐ Don't know
- ☐ No answer

3.3 Accessibility and Usability

Front-end (or front-office) is an User Interface or respondent interface that facilitates the respondent to complete a survey or diary (or whatever task). It provides functionality (business logic – CRM) and data necessary to complete the demanded tasks from the respondent.
Business logic is the programming that manages communication between an end user interface and a database. The main components of business logic are business rules and workflows. A business rule describes a specific procedure; a workflow consists of the tasks, procedural steps, required input and output information, and tools needed for each step of that procedure. Business logic describes the sequence of operations associated with data in a database to carry out the business rule.

Back-end (or back-office) is a data collector/researcher interface that facilitates the data collector/researcher to build a data collection/research or fieldwork. The back-end is an evolving computer system that not only designs the data collection/research. It also includes decision models on how the fieldwork is organized and administered. Data collected through the front-end are stored in databases of which the criteria are defined through the back-end. The back-end can also be able to communicate with other devices and sources. This way, data coming from the respondent can be fused with data captured via connected devices or sensors (also called Internet of Things). To do this an Application Programming Interface (API) needs to be defined.

Usability is the extent to which the tool can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use.

* 3.3.1 **Which functionalities does the front-end provide?**

- ☐ Information pages about the data collection
- ☐ Task overview (e.g. monitor the fieldwork of one or more surveys - according to user permissions - or showing a progress bar of the data collection period, or other monitoring aspects)
- ☐ Language selection
- ☐ Instructions to respondents
- ☐ Business logic to complete data collection
- ☐ Responsive design (cross device and browser usage)
- ☐ Usable for people with disabilities (e.g screen readers)
- ☐ Mode switching (e.g. mix-mode of interfaces used for data entry, data capturing: partly via web application online, partly via App on smartphone or tablet,..)
- ☐ Manage respondent reminders
- ☐ Other functionalities - please specify below
- ☐ Don't know
- ☐ No answer

* 3.3.2 If Other – please specify

Providing instant and delayed feedback to respondents on their IEQ

* 3.3.3 **Is it a multipurpose tool (it can be used by different users for different data collection/research purposes)?**

- ○ Yes
- ○ No
- ○ Don't
- ○ know No

answer

3.3.4 **On a scale from 1 to 5, how do you rate its effectiveness...**

1 = "very poor"; 2 = "poor"; 3 = "moderate"; 4 = "good" ; 5 = "very good"

	1	2	3	4	5	Don't know	No answer
* ...in the defined phases of the collection?	○	○	○		○	○	○
* ...for the underlying business logic of the collection flow?	○	○	○	○	○		○

3. 3.5 **On a scale from 1 to 5, how supportive is the tool in passing from …**

1 = "not at all supportive"; 2 = "not enough supportive"; 3 = "somehow supportive"; 4 = "supportive enough" ; 5 = "very supportive"

	1	2	3	4	5	Don't know	No answer
* ...the definition of data needs to the setup of the tool?	○	○	○	○	○	○	○
* ...the collection of data to their availability?	○	○	○	○	○	○	○
* ...the availability of data to their valorisation?	○	○	○	○	○	○	○

3.4 Assistance and Feedback to the respondent

* 3.4.1 **What modes of assistance are foreseen to explain the use of this tool?**

at least 1 choice(s)

- ☐ Download documentation/instructions website
- ☐ In app instructions
- ☐ Instructions provided in the app store, or app site
- ☐ Instruction video
- ☐ Dedicated website/page
- ☐ Real time helpdesk – chat function
- ☐ Support team
- ☐ FAQ
- ☐ Chatbot (chatting with a robot)
- ☐ Other – please specify below
- ☐ Don't know
- ☐

* 3.4.3 **Is it possible to give feedback to the respondent via this tool?**

at least 1 choice(s)

For example: overview answers, time expenditure, graphics...

- ☐ No
- ☐ Yes, during the completion of the data collection
- ☐ Yes, after the completion of the data collection
- ☐ Yes, after the fieldwork
- ☐ Other – please specify below
- ☐ Don't know
- ☐ No answer

3.5 Fieldwork monitoring module

This module (feature) gives the possibility to monitor or control how the online tool supports the fieldwork organiser – the statistical institute. It is a kind of surveillance system to monitor whether a given respondent opened and/or filled in the questionnaire and/or diary.

3.5.1 **Does the tool include a fieldwork monitoring dashboard either as built-in or plug-in module?**

- ○ Yes, as a built-in module
- ○ Yes, as a plug-in module
- ○ No, but this feature will be developed in the future
- ○ No
- ○ Don't know
- ○ No answer

3.5.2 **Does the tool allow a connection to the selected sample: monitoring of respondent's actions like opening / neglecting, filling, finishing of the use of the tool during the data collection period?**

- ○ Yes
- ○ No
- ○ Don't know
- ○ No answer

3.5.3 **What kind of information is possible to collect via the module?**

Status of the measured substances per minute

3.5.4 **Does the tool allow a connection to cost calculation?**

- ○ Yes
- ○ No
- ○ Don't know
- ○ No answer

4 OTHER DATA SOURCES CONNECTED TO THE TOOL

In this context **sources** are organized streams of data inflow, via a multifaceted approach. These streams can be active or passive.

* 4.1 **Is the tool able to request and receive data from other data sources (internet data, scanner data, log files, administrative data, etc.)?**

at least 1 choice(s)

- ☐ Yes, electronic data via file upload and using predefined fields
- ☐ Yes, electronic data via Application Programming Interface (API)
- ☐ Yes, other - please specify below
- ☐ Not yet, but this feature is in development
- ☐ No, and not in development
- ☐ Other – please specify below
- ☐ Don't know

* ☐

* 4.3 **What sources can be connected to the tool to obtain external data?** *at least 1 choice(s)*

Data capture is the process by which collected data are put in a machine-readable form. Elementary edit checks are often performed in sub-modules of the software that does data capture.

Scanner data are detailed data on sales of consumer goods obtained by 'scanning' the bar codes for individual products at electronic points of sale in retail outlets. The data can provide detailed information about quantities, characteristics and values of goods sold as well as their prices.

- [ ] Administrative data
- [ ] Proxy registration (e.g. parent brings children to school, when the activity is registered it is also shown in children's diary)
- [ ] Smartphone (GPS, accelerometer, gyroscope, Near Field Communication (NFC), Bluetooth, Noise, Camera, Heart Rate, Blood Pressure …)
- [ ] External GPS
- [ ] Wearable – activity tracker
- [ ] External sensors (CO2, Temperature, Velocity, …)
- [ ] Loyalty cards data
- [ ] Cash register/scanner data
- [ ] Credit/debit cards data
- [ ] Other – please specify below
- [ ] None
- [ ] Don't know
- [ ] No answer

* 4.5 **What sort of information is captured?** *at least 1 choice(s)* *Multiple answers are possible*

- [ ] Profile data (e.g. name, gender)
- [ ] Survey data (e.g. professional status)
- [ ] Activity data (e.g. sleeping) or Expenditure data
- [ ] Context data (e.g. location, with whom?)
- [ ] Don't know
- [ ]

None of the above

* 4.6 **Where is the data coming from these devices and sensors stored?**

A **Data source** is a location or service from where data or metadata can be obtained.

- ( ) Externally – (a copy of) the data source is provided afterwards
- ( ) Externally – via an API-key the data source can be consulted
- ( ) Externally – via an API-key the data is stored on a proprietary server
- ( ) Internally – the data is collected on a proprietary server
- ( ) Other – please specify below
- ( ) Don't know
- ( )

* 4.8 **Is the data collected through external sources used to provide suggestions or ask additional questions to the respondent?**

- ( ) No
- ( ) Yes, based on input from connected devices and sensors and a developed algorithm the respondent receives suggestions on their past activities (e.g. based on frequently visited locations "WORK" as an activity is suggested – "Are you working?"; "Did you stop working?")
- ( ) Yes, based on input from connected devices and sensors extra questions are asked to the respondent (e. g. someone is in a shopping centre and based on this information extra questions are asked – "are you

shopping?" or reminders - "please do not forget to register the purchases in the diary")

- ○ Other – please specify below
- ○ Don't know
- ○ No answer

4.10 **How are these data used?** *at least 1 choice(s)*

Multiple answers are possible

- ☐ Paradata (data are stored as extra variables)
- ☐ Direct input (the data are ~~automatically~~ used as input in the survey after further processing)
- ☐ Controlled input (the respondent validates the input first)
- ☐ As input for decision models (an algorithm interprets the data before input is presented to the respondent)
- ☐ Don't know
- ☐ No answer

* 4.11 **Are there any databases, wearables, sensors or connected devices linked to the tool so far?**

- ○ Yes
- ○ No
- ○ Don't know
- ○ No answer

~~4.12 **Which databases, wearables, sensors or connected devices are linked so far?**~~

* 4.13 **Is the tool able to deliver and provide data to another data source?** *at least 1 choice(s)*

- ☐ Yes, electronic data via file upload and using predefined fields
- ☐ Yes, electronic data via Application Programming Interface - API
- ☐ Yes, other - please specify below
- ☐ Not yet, but this feature is in development
- ☐ No, and not in development
- ☐ Other – please specify below
- ☐ Don't know
- ☐ No answer

5 TECHNICAL FEATURES OF THE TOOL

This part deals with the technical features of the **tool.** In order to fill it in you might need the assistance of a colleague from the development team.

5.1 Version and last update

5.1.1 **Can you indicate the version of the development of the tool?**

Format vX.Y.Z where X is the major version, Y is the minor version, and Z is the patch version, eg. v2.3.0

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5.1.2 **Can you indicate when the tool was last updated?**

Please indicate the last update, even if minor.

* 5.1.3 **Does the tool have any connected or built-in modules?** *at least 1 choice(s)*

- [ ] Yes, modules based on open source software
- [ ] Yes, it makes use of external software modules
- [ ] Yes, modules developed inside the organization
- [ ] No
- [ ] Don’t know
- [ ] No answer

* 5.1.4 **What functions of the tool are covered by the built-in or connected modules?** e.g. file format conversion, validation, etc.

?

5.2 Software architecture

* 5.2.1 **Where is the functionality of the tool performed?**

- [ ] Server accessed by the application
- [ ] Within the application itself
- [ ] Don't know
- [ ] No answer

* 5.2.2 **Which type of application is this tool?**

at least 1 choice(s)

A **web application** is a software application that runs on a remote server. It can be reached via a web browser of a computer, tablet or smartphone.

A **mobile application** is installed from an app store on a tablet, smartphone or watch. A mobile application can be **native** or **hybrid**. A **desktop application** is an application that runs stand-alone in a desktop or laptop computer.

- [ ] Web application
- [ ] Mobile native application
- [ ] Mobile hybrid application
- [ ] Desktop application
- [ ] Don’t know
- [ ] No answer

* 5.2.3 **Does the tool have a management website (Content Management System - CMS) to program data collection (e.g. prepare the collection tools, execute the fieldwork, define the database, etc.)?**

A **Content Management System** is a computer application that supports the creation and modification of digital content.

- ( ) Yes
- ( ) No
- ( ) Don’t know
- ( ) No answer

5.2.4 ~~**For the web application: which programming language and framework(s) are used?**~~

5.2.5 ~~**For the mobile native application: which programming language and framework(s) are used?**~~

5.2.6 ~~**For the mobile hybrid application: which programming language and which framework(s) are used?**~~

~~5.2.7 **For the desktop application: which programming language and framework(s) are used?**~~

~~5.2.8 **For the management website: which programming language and framework(s) are used?**~~

* 5.2.9 **For which operating systems is the desktop application functional?** *at least 1 choice(s)*

Multiple answers are possible

- ☐ Linux
- ☐ iOS
- ☐ Windows
- ☐ Other OS – please specify below
- ☐ Don't know
- ☐ No answer

5.2.11 **Considering the data storage organization, can you provide information about what database management system is used to design the database.**

Data are generated in .csv format. Any kind of database can access these data

5.2.12 **Considering the data storage organization, can you provide information about possible other elements which play a role here like security, interfaces to access the database (front-end) and how the back-end (Administration, Maintenance, Back up procedures,...) is organised.**

The data are stored on the uHoo cloud environment, somewhere in Europe, but insufficient information is available for us to consider this a viable alternative for future use. Potentially, it would be feasible to secure a dedicated ESS web environment; other IEQ measurement systems offer this possibility, against a fee obviously. If we decide to go through with this kind of measurement, it would be much preferable if measurement systems would be built for our specific demands, with a secure cloud environment under ESS direction.

5.3 Security and Privacy

*5.3.1 **Concerning password security, which precautions are applied?** *at least 1 choice(s)*

Password composition policy includes e.g. the minimum number of characters from the set of lowercase letters, uppercase letters, special characters, and numbers.

- ☐ Protection/encryption
- ☐ Password composition
- ☐ Reuse password*
- ☐ Reset password
- ☐ Password security protocol
- ☐ Other – please specify below
- ☐ Don't know
- ☐ No answer

* That is the solution chosen here, as being the most practical for the present purpose, but is obviously not the preferable solution. Other options are feasible, but need to be developend and tested.

*5.3.2 If Other – please specify

Password is needed to install the app

*5.3.3 **Concerning communication security: which precautions are applied?** *at least 1 choice(s)*

A **communication protocol** is a defined set of rules and regulations that determine how data is transmitted in telecommunications and computer networking.

- ☐ Automatic communication (no one reads/sends out the emails personally; left aside the emails send to the help-desk)
- ☐ Token based communication (no address but a token is used)
- ☐ Communication protocol
- ☐ Other – please specify
- ☐ Don't know
- ☐ No answer

*5.3.4 If Other – please specify

*5.3.5 **Concerning server/data storage security: which precautions are applied?** *at least 1 choice(s)*

A **Virtual Private Server** is a virtual machine sold as a service by an Internet hosting service. A VPS runs its own copy of an operating system (OS), and customers may have superuser-level access to that operating system instance, so they can install almost any software that runs on that OS.

A **client/server protocol** is a communications protocol that provides a structure for requests between client and server in a network.

- ☐ Virtual Private Server (VPS)
- ☐ Back-up strategy

Protection/encryption

Software on server in data collection countries

- [ ] Database on server in data collection countries
- [ ] Data transmission protocol
- [ ] Server protocol
- [ ] Data storage protocol
- [ ] Other – please specify
- [ ] Don't know
- [ ] No answer

*5.3.6 If Other – please specify

*5.3.7 **Concerning privacy: which precautions are applied?** *at least 1 choice(s)*

Informed consent is a permission granted in full knowledge of the possible consequences, the risks involved and the alternatives. An **anonymization protocol** allows anonymizing personal data within the data transmission from data holders to a data collector without privacy breaches.

- [ ] Informed consent
- [ ] Split-up personal information from collection data
- [ ] Anonymization protocol
- [ ] Software on server
- [ ] Software on client
- [ ] Other – please specify
- [ ] Don't know
- [ ] No answer

*5.3.9 **Is the setup of the tool in conformity with … ?**

at least 1 choice(s)

Data treatment **confidentiality** refers to rules applied for treating the data set to ensure that private information from individual units cannot be accessed and to prevent unauthorised disclosure.

- [ ] ESOMAR/ISO regulations on data protection and confidentiality
- [ ] National privacy law – please specify below
- [ ] EU privacy law - GDPR
- [ ] None of above
- [ ] Don't know
- [ ] No answer

* 5.3.10 Which country/countries privacy law? – please specify

5.4 Functionalities of the applications

*5.4.1 ~~**For which browsers is the web application compatible/tested?** *at least 1 choice(s)*~~ NA

* 5.4.3 ~~**For which screen sizes is the web application employable?** *at least 1 choice(s)*~~ NA

Multiple answers are possible

*

* ~~5.4.4 **Is the web application accessible via a public link?**~~ NA

* 5.4.6 ~~**For which operating systems is the mobile application (native or hybrid) functional?**~~ NA

* 5.4.8 ~~**Is the mobile application accessible via a link and/or via the app store?**~~ NA

* 5.4.10 ~~**Which of the following devices can be used in a survey using this tool?**~~ NA

*

* 5.4.12 **Which of the following features (if any) apply to the tool.**

at least 1 choice(s)

Multiple answers are possible

- ☐ Respondents can use different devices through the study and the content on these devices is automatically synchronized.
- ☐ Respondents can use different devices through the study, but the content on these devices is not automatically synchronized.
- ☐ Respondents can log online and offline
- ☐ The User Interface (UI) of the web and mobile application is consistent
- ☐ None of these
- ☐ No answer

* 5.4.13 **Please indicate which functionalities are present in the web and/or mobile application(s)?** NA

5.4.15 **Can multiple languages be offered during a survey? Which of the following options apply?**

Yes, Dutch, English, French, German, and various others

* 5.4.16 **In which language(s) is the survey offered?**

5.5 Functionalities of the management website

* 5.5.1 **How is the login process managed?** *at least 1 choice(s)*

Multiple answers are possible

- ☐ Login screen: user name & password
- ☐ Login validation & communication
- ☐ Different user levels and roles
- ☐ A management level to define the user level and roles
- ☐ Other – please specify below
- ☐ Don't know
- ☐ No answer

* 5.5.3 **Which phases in the statistical production are covered by the tool?**

at least 1 choice(s)

- ☐ Selection of the application(s) and devices to be used (web app, native app, hybrid app; computer, laptop, tablet, Smartphone, Smartwatch)

- ☐ Development of questionnaires
- ☐ Development of diaries
- ☐ Use/inclusion of other data sources through use of API
- ☐ Definition of communication (paper, on screen, email, notification, …)
- ☐ Definition of respondents
- ☐ Set up of data collection flow
- ☐ Execution of fieldwork/data collection
- ☐ Calibration of the data (method to weigh the collected data based on population representation, and dispersion over the days)
- ☐ Download/Export of database
- ☐ Download metadata
- ☐ Other – please specify below
- ☐ Don't know
- ☐ No answer

*5.5.5 **Which kind of information can be downloaded?** *at least 1 choice(s)*

The **paradata** of a survey are data about the process by which the survey data were collected.

- ☐ Codes of variables, activities
- ☐ Time points (begin & end time)
- ☐ Variables names & labels (questionnaires, context questions)
- ☐ Text/category of variables names & labels (questionnaires, context questions)
- ☐ Paradata (actual logging information)
- ☐ Other – please specify below
- ☐ Don't know
- ☐ No answer

*5.5.7 **To which formats can the database be exported?**

- ☐ .csv (Comma Separate Values)
- ☐ .xslx (Excel)
- ☐ .sav (SPSS)
- ☐ .por (R)
- ☐ .xpt (SAS)
- ☐ Other – please specify below
- ☐ Don't know
- ☐ No answer

*5.5.8 If Other – please specify

5.5.9 **To which level does the metadata relate?**

- ☐ Individual/household level (e.g. age, profession, family composition on the respondents/cluster level)
- ☐ Statistical production level (e.g. having a multiple choice question with a number of answer categories)
- ☐ Calibration level (e.g. having a sample of males and females, in different age categories)

- ☐ Other – please specify below
- ☐ Don’t know
- ☐ No answer

END OF THE QUESTIONNAIRE

THANK YOU FOR YOUR CONTRIBUTION