

Unlock FAIR Data Excellence in Social Sciences with DataLift!

Digital Innovation Expo '23 demo booth

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Back-ground

Data Analytics

Vision

Self reported research

Work flow

Activities and DataLift services

Archi-tecture

Current + Target architecture

Next steps

Future developments for FAIRification



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Back-ground

Data Analytics

for food chains and consumer-oriented research

Overcoming bottlenecks in consumer research



Researcher

Research Institute

Social Science Domain

ISSUE	SOLUTION
Time-Intensive Data Management	FAIR principles by design significantly reduces DM burden for researchers
Questionnaire Design Complexity	Standardized components ensure easy questionnaire creation
Integration Issues Across Research Phases	Research design, survey implementation and data management are seamlessly integrated
Data Disorganization and Lack of Transparency	One central organisation environment for supporting all phases of the study
Access Control and Security Concerns	The DataLift and Odata combination realizes secure access management and sharing
Limited Collaboration Opportunities	Collaboration is improved by enabling flexible team composition and role distribution
Inefficient Analytics and Discovery	Enhanced analytics possibilities emerge once adoption has been established


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Archi-tecture

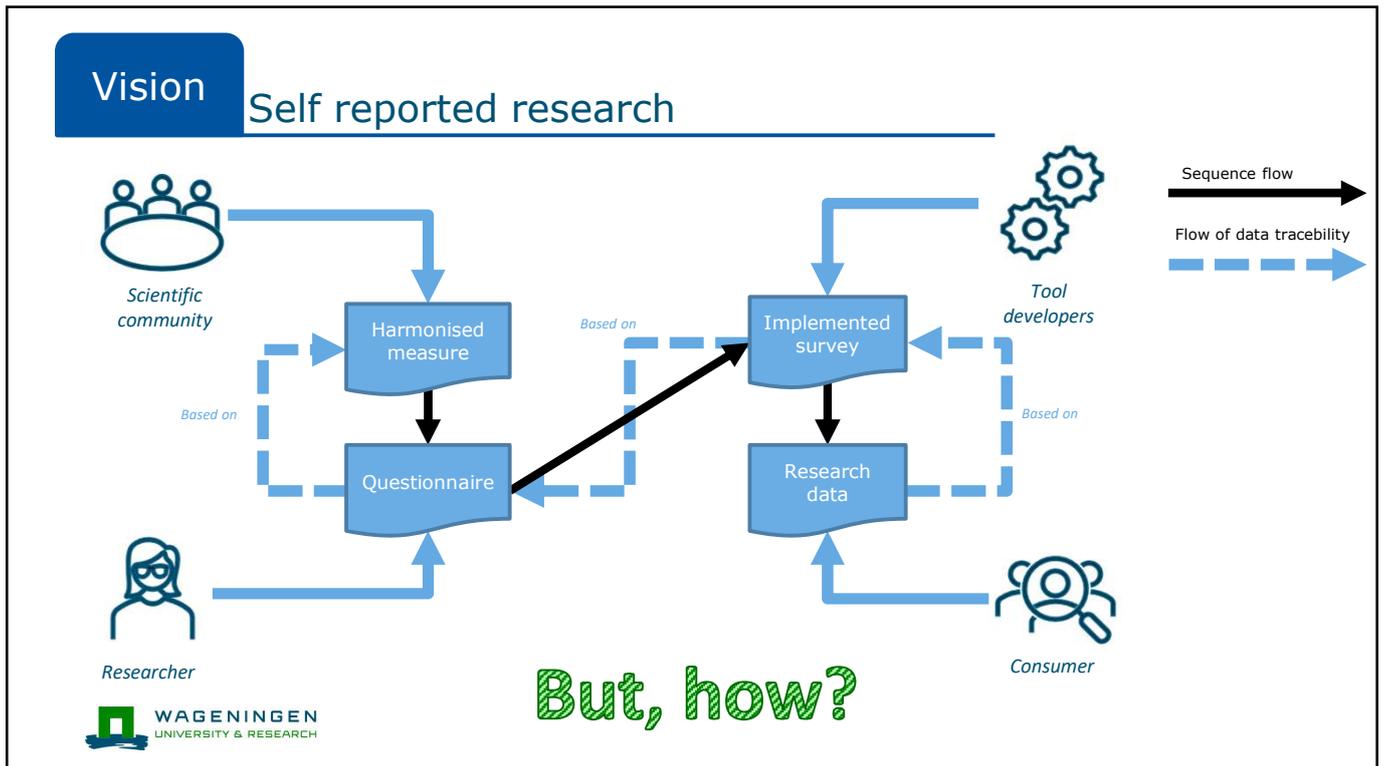
Current + Target architecture

Next steps

Future developments for FAIRification


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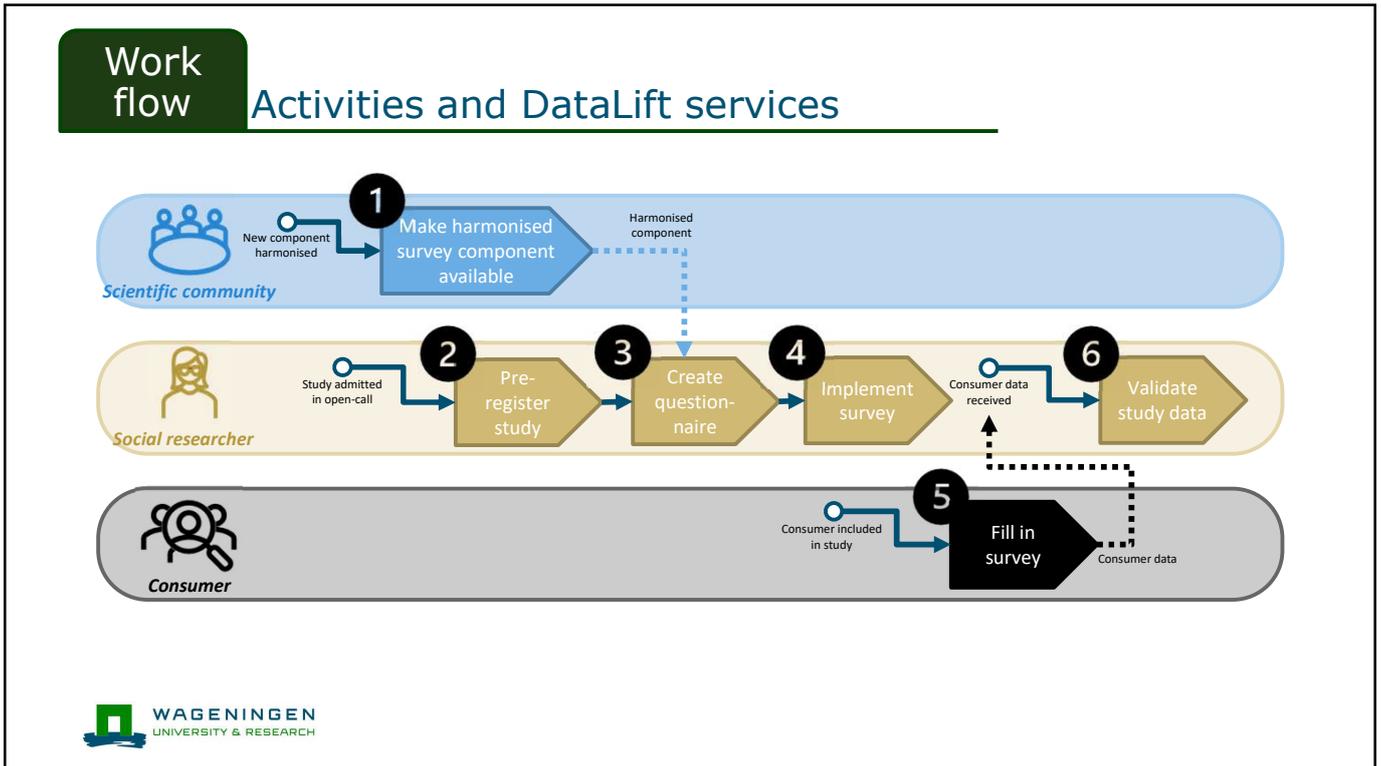
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CONTENTS

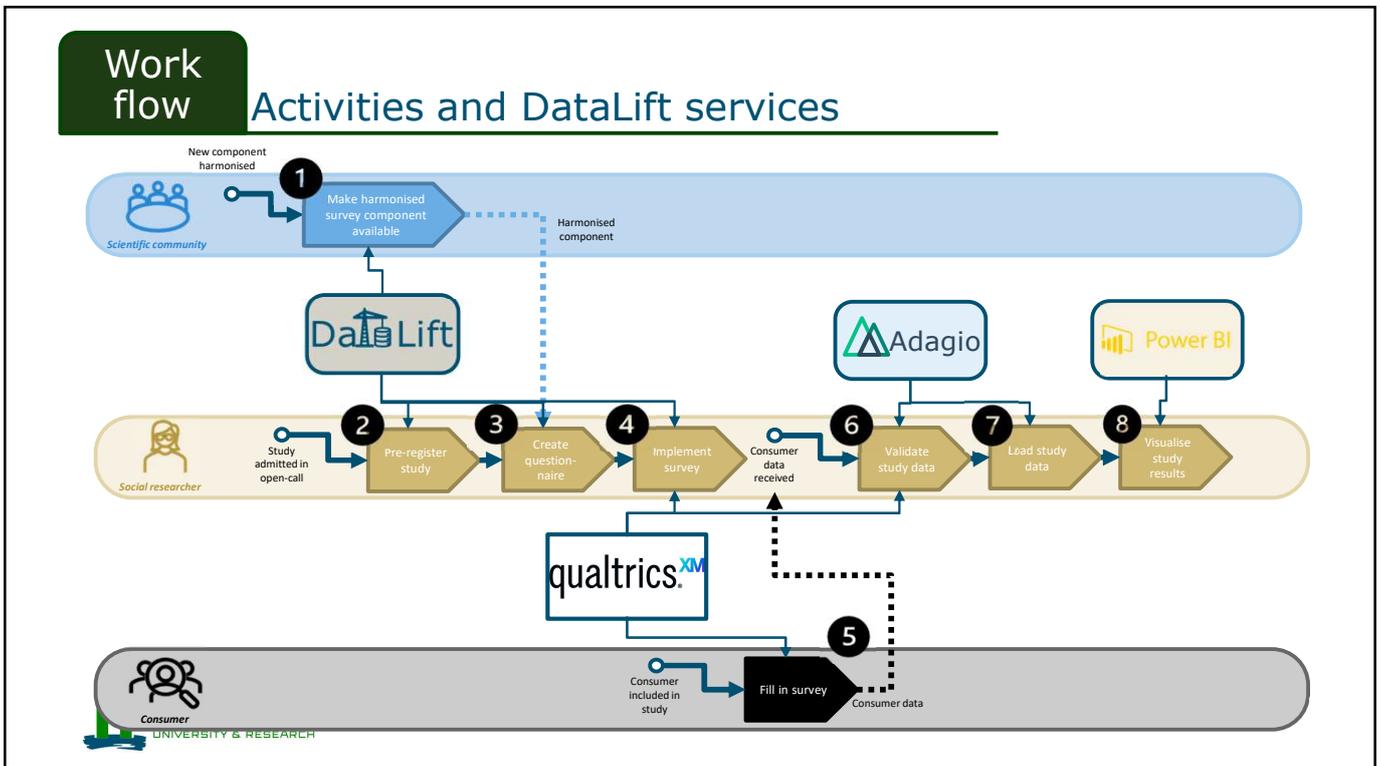
- Back-ground** Data Analytics
- Vision** Self reported research
- Work flow** Activities and DataLift services
- Archi-tecture** Current + Target architecture
- Next steps** Future developments for FAIRification

WAGENINGEN UNIVERSITY & RESEARCH

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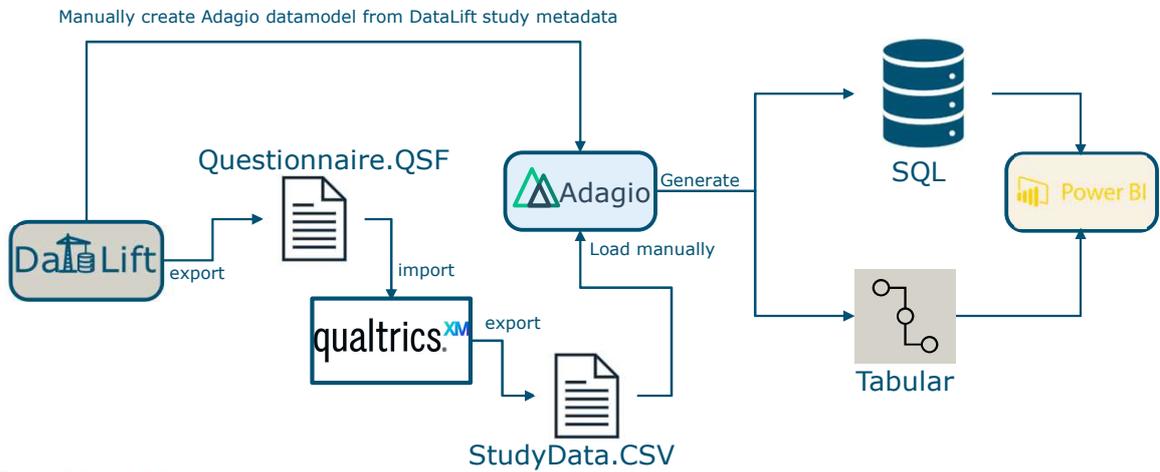


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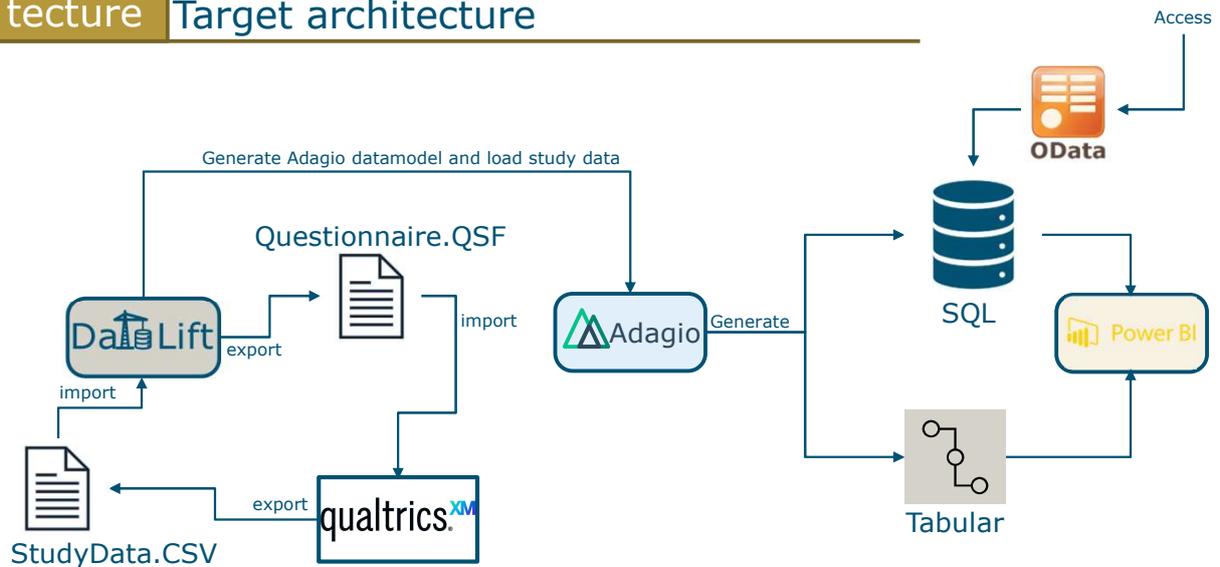
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Architecture Current architecture



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Architecture Target architecture



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1. Make harmonised survey component available

Scientific community



makes available

Social researcher



accesses

1.1 Provide protocol metadata

Each harmonised measure is described in metadata to make them **findable** for use in surveys.

All fields are obligatory

For now open text fields, in future more structured classifications

1.2 Provide protocol content

Each harmonised measure consists of a predefined set of items and classifications which are **reusable** in surveys.

The admin can edit the metadata

Rules can be added to realise jumping through questions based on answers

Treeview shows structure (component-question-classification) and order can be managed by dragging and dropping

1.3 Search&find harmonised Protocol

Harmonised measures are made available in the harmonised protocol search tool.

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1.1 Provide protocol metadata

Each harmonised measure is described in metadata to make them **findable** for use in surveys

Component name is required 0 / 2000

Category 0 / 2000

Keywords 0 / 2000

Link to background document 0 / 2000

Theoretical background 0 / 2000

Language

English	Back-Translated	Checked	Tested
Nederlands	Back-Translated	Checked	Tested

All fields are obligatory

For now open text fields, in future more structured classifications



1.2 Provide protocol content

Each harmonised measure consists of a predefined set of items and classifications which are **reusable** in surveys

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1.3 Search&find harmonised Protocol

Harmonised measures are made **accessible** in the harmonised

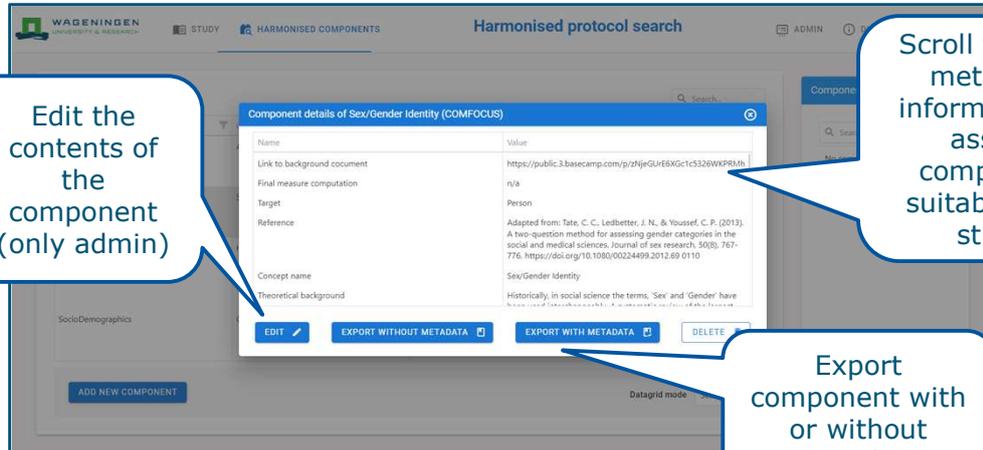
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1.3 Search&find harmonised Protocol

Metadata details

Harmonised measures are made **accessible** in the harmonised protocol search tool



Edit the contents of the component (only admin)

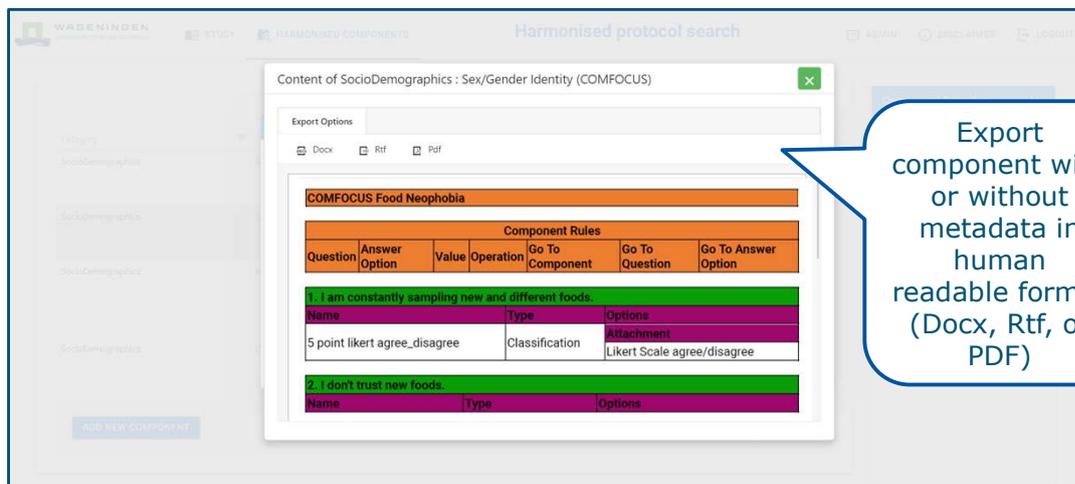
Scroll through metadata information to assess component suitability for study

Export component with or without metadata

1.3 Search&find harmonised Protocol

Export component

Harmonised measures are made **accessible** in the harmonised protocol search tool

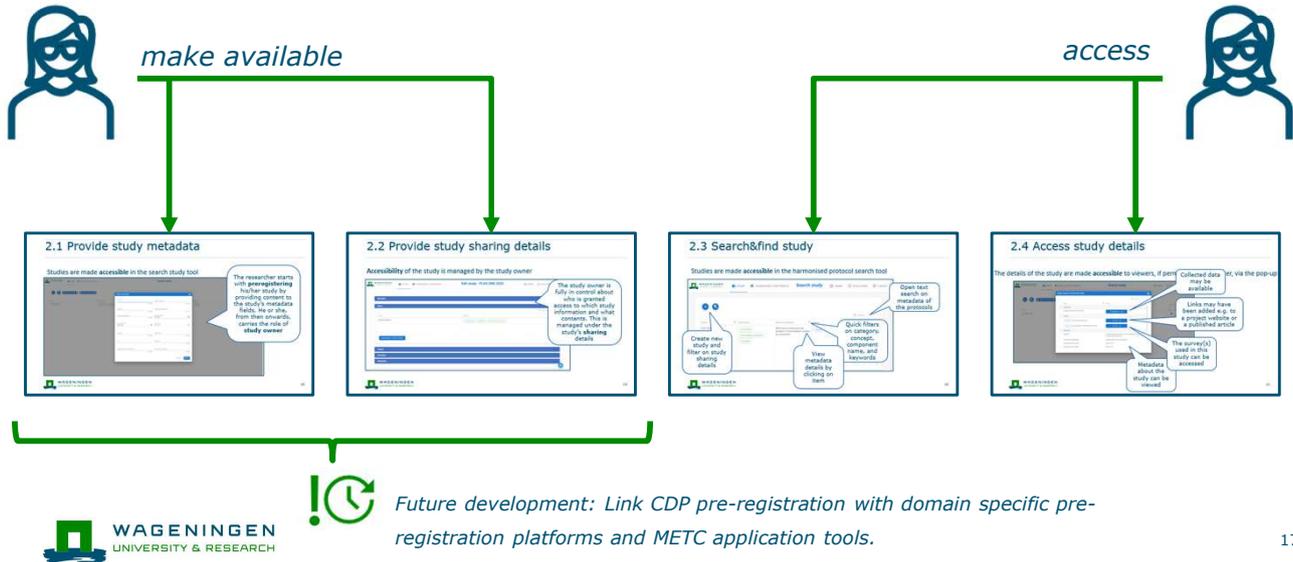


Export component with or without metadata in human readable format (Docx, Rtf, or PDF)

2. Pre-register study

Social researcher (study owner)

Social researcher



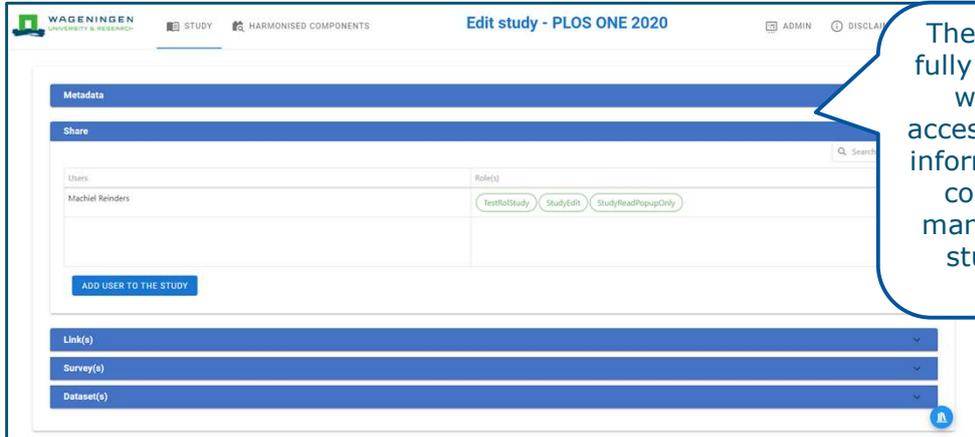
2.1 Provide study metadata

Studies are made **accessible** in the search study tool

The researcher starts with **preregistering** his/her study by providing content to the study's metadata fields. He or she, from then onwards, carries the role of **study owner**

2.2 Provide study sharing details

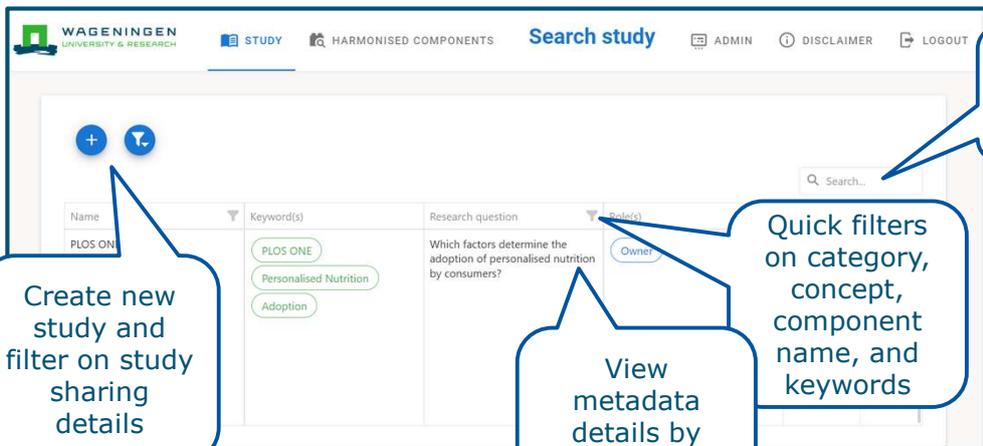
Accessibility of the study is managed by the study owner



The study owner is fully in control about who is granted access to which study information and what contents. This is managed under the study's **sharing** details

2.3 Search&find study

Studies are made **accessible** in the harmonised protocol search tool



Create new study and filter on study sharing details

View metadata details by clicking on item

Quick filters on category, concept, component name, and keywords

Open text search on metadata of the protocols

2.4 Access study details

The details of the study are made **accessible** to viewers, if permitted, via the pop-up

Collected data may be available

Links may have been added e.g. to a project website or a published article

The survey(s) used in this study can be accessed

Metadata about the study can be viewed

3. Create questionnaire

Social researcher



make available

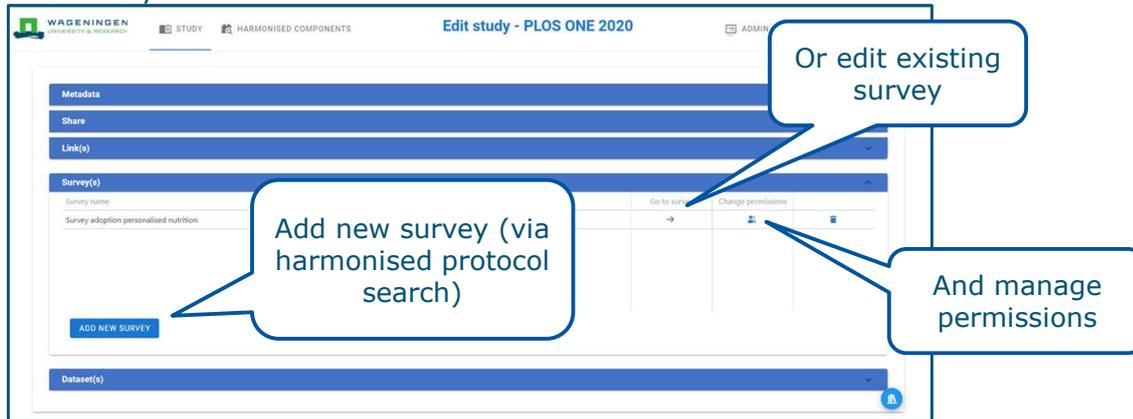
3.1 Add new survey to study
 Surveys can be added to studies via the study details (or directly via the harmonised protocol search tool).
 Callouts: Or edit existing survey, Add new survey (via harmonised protocol search), And manage permissions.

3.2 Select relevant harmonised components
 In the harmonised protocol search tool, select the relevant components to be added to the survey.
 Callouts: Select components, Overview of selected components is shown, Create new survey, Turn datagrid mode to "create mode".

3.3 Edit survey content
 A survey can be edited like a harmonised component can be edited, only here user specific content (questions/fields) can be added.
 Callouts: Rearrange order by dragging and dropping, Edit texts to make them study specific.

3.1 Add new survey to study

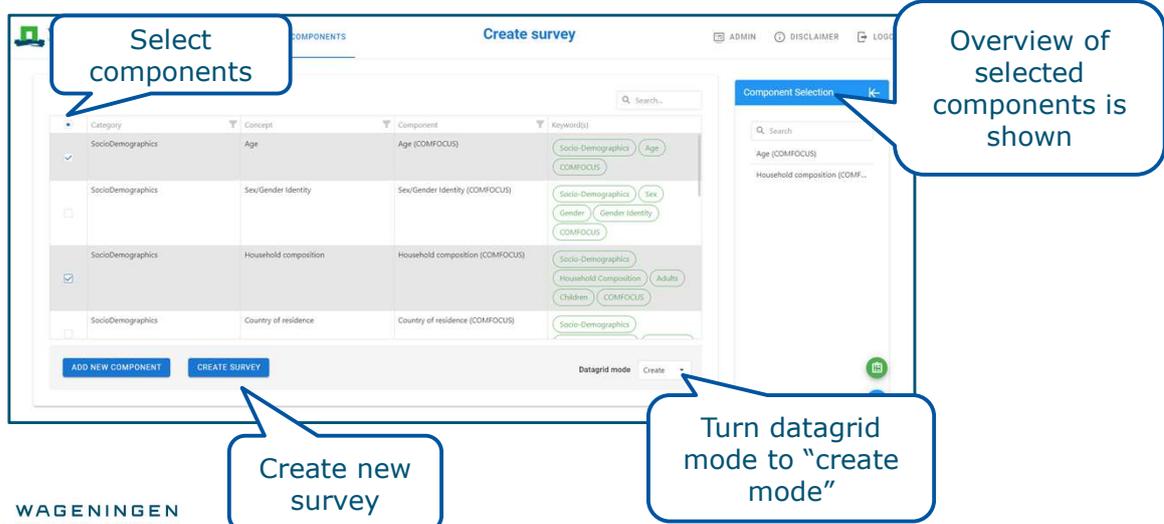
Surveys can be added to studies via the study details (or directly via the harmonised protocol search tool)



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3.2 Select relevant harmonised components

In the harmonised protocol search tool, select the relevant components to be added to the survey



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3.3 Edit survey content

A survey can be edited like a harmonised component can be edited, only here user specific content (questions/fields) can be added

The screenshot shows a web interface for editing a survey titled "Survey adoption personalised nutrition". On the left, there is a sidebar with a tree view of survey components under "Language: Nederlands". Components include "Survey adoption personalised nutrition", "Age (2022, PLOS ONE)", "Age", "Leefstijlklasse", "Education level (2022, PLOS ONE)", "Education", "Education level: Escala", "Net monthly income (2022, PLOS ONE)", "Sex (2022, PLOS ONE)", "Intention to use", and "Ambivalence". A callout bubble points to the "Age" component with the text "Rearrange order by dragging and dropping". The main area shows a table for editing the survey content:

Name	Title	Research question	Introduction
Survey adoption personalised nutrition	Survey adoption personalised nutrition	to adopt or not to adopt personalised nutrition?	

Another callout bubble points to the table with the text "Edit texts to make them study specific". The Wageningen University & Research logo is in the bottom left.

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4. Implement survey

The image shows three sequential screenshots of the survey implementation process:

- Export questionnaire:** Shows a dialog box for exporting a questionnaire.
- Import questionnaire file:** Shows a dialog box for importing a questionnaire file.
- Publish survey:** Shows a survey being published to a mobile device.

Green arrows indicate the flow from export to import to publish. A large green bracket spans the first two steps.

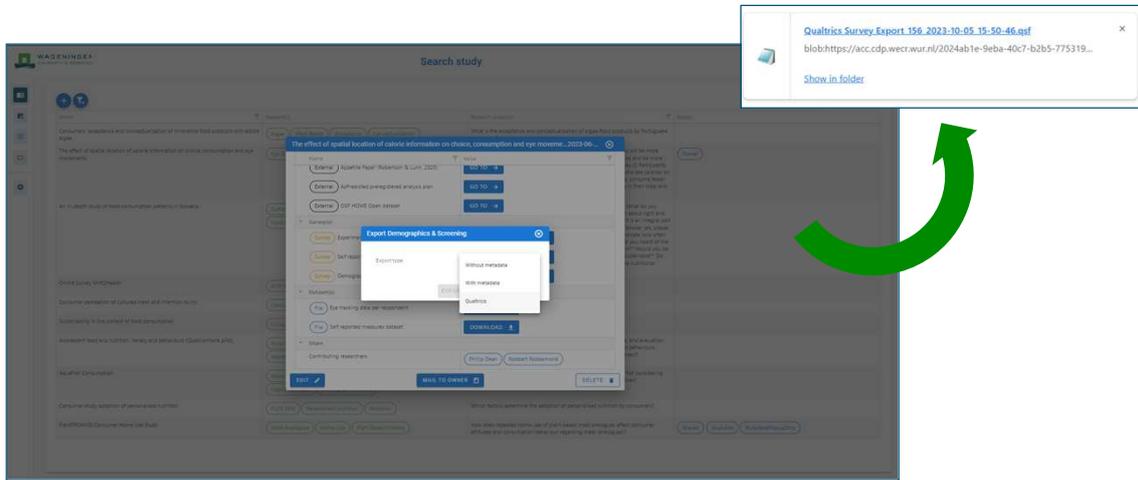


Future development WCDS project: Link CDP questionnaire export with the WEcR data science solution Adagio

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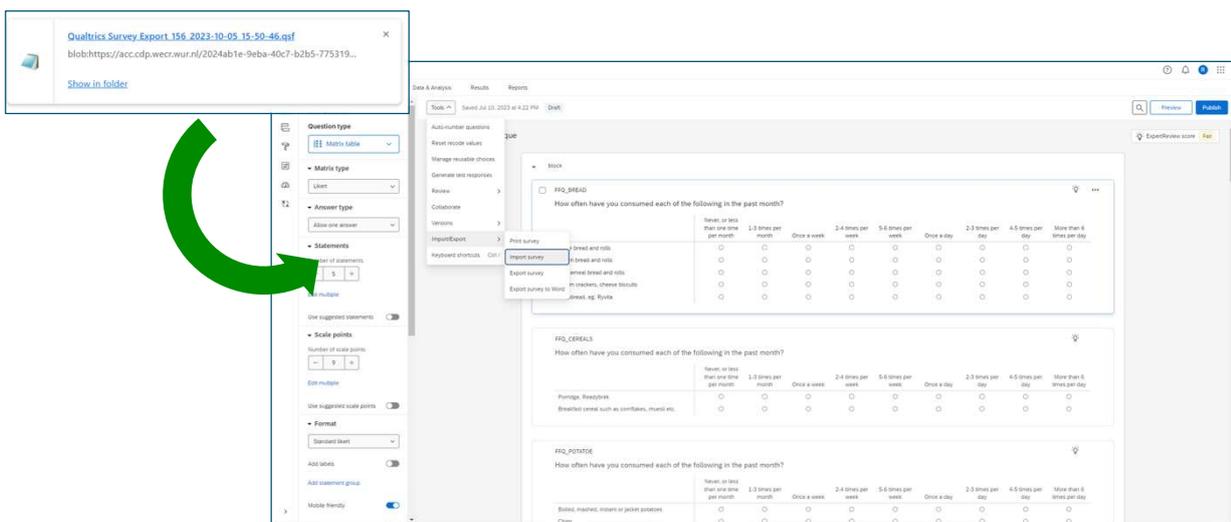
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Export questionnaire



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Import questionnaire file

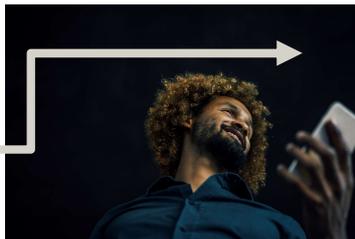


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Publish survey

	Never or less than one time per month	1-3 times per month	Once a week	2-4 times per week	5-6 times per week	Once a day	2-3 times per day	4-5 times per day	More than 6 times per day
Beef: roast, steak, mince, stew or casserole	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Beefburgers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pork: roast, chops, stew or slices	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lamb: roast, chops or stew	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chicken or other poultry eg Turkey	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bacon	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ham	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Comed beef: Spam, luncheon meats	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sausages	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Savoury pies, eg: Meat pie, pork pie, pasties, steak & kidney pie, sausage rolls	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Liver, liver pâté, liver sausage	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fried fish in batter, as in fish and chips	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fish fingers, fish cakes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other white fish, fresh or frozen, eg: Cod, haddock, plaice, sole, halibut	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Oily fish, fresh or canned, eg: Mackerel, hoppers, tuna, salmon, sardines, herring	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Shellfish, eg: Crab, prawns, mussels	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fish roe, tsaramasalata	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. Implement survey



- Taking place in commercial survey tooling
- For now a survey tool has to be configured manually based on the design
- In future integration is desirable

6. Validate study data

Social researcher



process data

6.1 Loading data leads to validation messages

Via the data management tool Adagio, data can be loaded to the generated databases to make it available for analysts and evaluation. Validation messages are reenvisioned if there are conflicts with the available metadata descriptions.

Or preferably not! :-)

6.2 After data is loaded it can be explored

Once data has been successfully loaded, it is available for analysts and visualisations. Via standardised templates the visualisations will take a minimum amount of effort to realise... e.g. via PowerBI

Data is structured and FAB ready. The Foundation has been laid for advanced AI analyses

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The survey design leads to the generation of a data model in the WEcR tool Adagio

CONSUMER STUDY PERSONALISED NUTRITION

- Survey
- Identifier
- Ambivalence
 - Comfort
 - Mixed feelings
 - Uneasiness
- Consumer Characteristics
 - Education
 - Gender
 - Income
 - Age
- Context characteristics
- Intention to use
 - Consideration
 - Determination
 - Intention

Metadata - Consideration

Common Concept *
Consideration

Common Concept Description:
Consideration definition to be added as item in construct Intention to use for consume

Technical Name *
Consideration

Nullable

SAVE RESET

Classifications *

Name	Default	DimEntity	ExternalId	Unit
7 point likert agree		Consideration 7		
7 point likert agree		point likert agree		

ADD CLASSIFICATION

Classification elements

External Id	Common Concept	Valid From	Valid To
1	Strongly agree	-	-
2	Agree	-	-
3	Somewhat agree	-	-
4	Don't agree/don't disagree	-	-

Based on the data model, databases are generated (SQL + Tabular)

This is a prerequisite for the validation of data

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6.1 Loading data leads to validation messages

Via the data management tool Adagio, data can be loaded to the generated databases to make it available for analyses and evaluation. Validation messages are communicated if there are conflicts with the available metadata descriptions

The screenshot shows the Adagio interface with an 'Upload data' section and a table of loaded files. A speech bubble points to the table with the text 'Or preferably not! ;-)'.

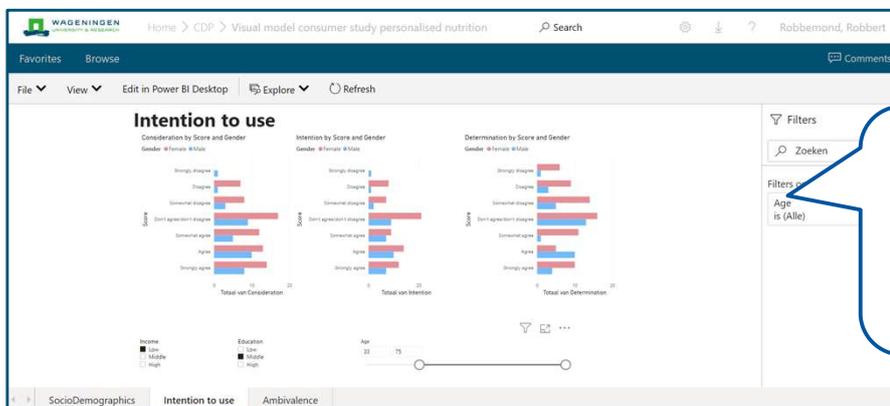
ID	FileName	UserName	Delivered	Status
73865	pone.0231342.s003.csv	robbe007	2022-05-31	✓
73303	pone.0231342.s003.csv	robbe007	2022-05-25	✓
72606	pone.0231342.s003.csv	robbe007	2022-05-18	✓
72605	pone.0231342.s003.csv	robbe007	2022-05-18	✓
72604	pone.0231342.s003.csv	robbe007	2022-05-18	✓

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6.2 After data is loaded it can be explored

e.g via PowerBI

Once data has been successfully loaded, it is available for analyses and visualisations. Via standardised templates the visualisations will take a minimum amount of effort to realise...



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Next steps Future developments for FAIRification



What output?	What outcome?	What impact?
<i>Link CDP pre-registration with domain specific pre-registration platforms and METC application tools</i>	Increased transparency of research approach while decreasing efforts required from researcher	Improved adoption of FAIR data management practices while increasing data science capabilities
<i>Future development WCDS project: Link CDP questionnaire export with the WEcR data science solution Adagio</i>	Semi-automated data annotation realising machine readable datasets while unburdening the researcher	

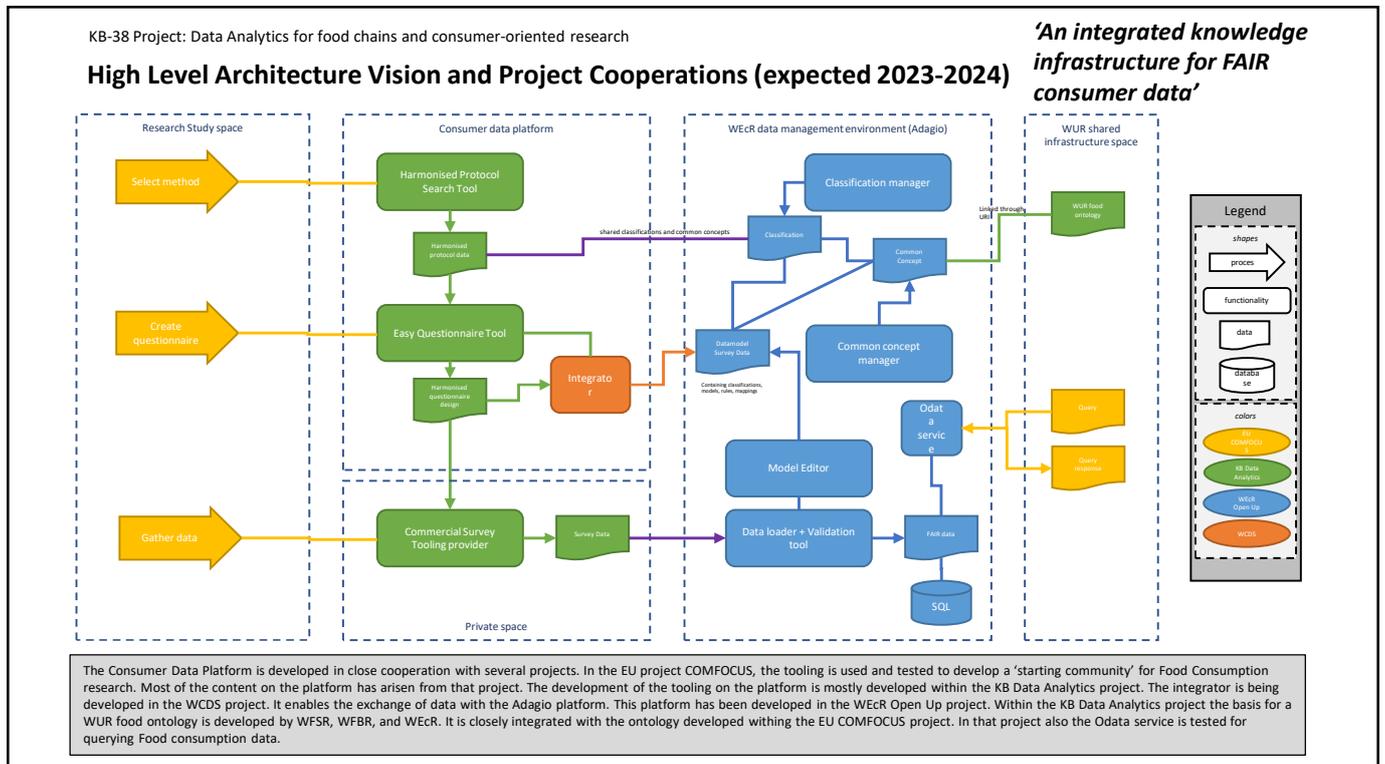


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