FoodE

D1.3 Data Management Plan (month 24)

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Project Acronym and Name	FoodE – Food Systems in European Cities
Type of action	IA – Innovation Action
Grant Agreement No.	862663
Work package	WP1 Coordination, project management and quality control
Dissemination level	Public
Document type	ORDP
Lead partner	ILS
Authors	Runrid Fox-Kämper, Kathrin Specht
Contributors	All partners
Planned delivery date	31/01/2022
Actual delivery date	24/01/2022
Project website	foode.eu
Project start date	01/02/2020
Duration	48 months
Version	4
Total number of pages	22
Keywords	Data collection, metadata, keywords, storage, app development, open access

Project consortium

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3	RMN	COMMUNE DE ROMAINVILLE	FR
4	SWUAS	FACHHOCHSCHULE SUDWESTFALEN	DE
5	ILS	INSTITUT FUR LANDES- UND STADTENTWICKLUNGSFORSCHUNG gGMBH	DE
6	FLY	FLYTECH SRL	IT
7	NOL	NOLDE ERWIN	DE
8	BOL	COMUNE DI BOLOGNA	IT
9	NAP	COMUNE DI NAPOLI	IT
10	UNINA	UNIVERSITA DEGLI STUDI DI NAPOLI FEDERICO II	IT
11	HCA	HAGUE CORPORATE AFFAIRS BV	NL
12	LAN	GEMEENTE LANSINGERLAND	NL
14	WR	STICHTING WAGENINGEN RESEARCH	NL
16	POL	POLAR PERMACULTURE SOLUTIONS AS	NO
17	TAS	TASEN MICROGREENS AS	NO
18	MBI	ASOCIATIA MAI BINE	RO
19	ARC	ARCTUR RACUNALNISKI INZENIRING DOO	SI
20	BEE	DRUSTVO URBANI CEBELAR	SI
21	SBD	AJUNTAMENT DE SABADELL	ES
22	ISL	ORGANIZACION DE PRODUCTORES DE TUNIDOS Y PESCA FRESCA DE LA ISLA DE TENERIFE	ES
23	ULL	UNIVERSIDAD DE LA LAGUNA	ES
24	UAB	UNIVERSITAT AUTONOMA DE BARCELONA	ES
25	METAINST	STICHTING METABOLIC INSTITUTE	NL
26	NBL AS	NABOLAGSHAGER AS	NO

This project has received funding from the European Union's Horizon 2020 research and innovation programme under **grant agreement No 862663**.

Document Control Sheet

Version	Date	Summary of changes	Author(s)
1	01/12/2021	First draft sent to all WP leaders	ILS
2	15/12/2021	Draft reviewed by WP leaders and task leaders	ILS, UNIBO, WP leaders
3	10/01/2022	Revised draft sent to GA for review and approvement	All partners
4	24/01/2022	Review finalized by GA	All partners
final	31/01/2022	Final version submitted	ILS, UNIBO

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List of Abbreviations

App	Application software
CRFS	City Region Food Systems
CRFSI	City Region Food System Initiative
DMP	Data Management Plan
GA	General Assembly
GIS	Geoinformation System
HEI	Higher Education Institution
KPI	Key Performance Indicators
IPR	Intellectual Property Rights
SC	Steering Committee
WoS	Web of Science
WP	Work Package

0 Scope of the Data Management Plan

This Data Management Plan (DMP) describes how research data is managed throughout the lifetime of the project "FoodE – Food systems in European Cities Innovation Action" (Feb 2020 – Jan 2024) and after its end. It summarizes procedures and minimum requirements to organize data in a consistent way according to the FAIR (**F**indable, **A**ccessible, **I**nteroperable, **R**e-usable) principles.

All data or documents produced or processed for governmental procedures are not affected by this data management plan. This plan is a working document and will be regularly updated when necessary, and all project partners will be informed about the changes made to this document.

Please note that agreements on common standards, folder structure and identifiers are updated during project steering committee (SC) meetings and internal coordination quality assessments. They will be made available via the project management tool SharePoint and in the general assembly (GA).

1 Data summary

1.1 Data collection purpose and relation to objectives

The purpose of the data collection and data generation within the FoodE project is to involve European local food initiatives in the design, implementation and monitoring of environmentally, economically and socially sustainable city/region food systems (CRFS). The key challenge of the project is to improve food and nutrition security of European citizens by shaping a

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sustainable environment able to increase accessibility and availability of affordable, safe and nutritious food. This challenge will be tackled by setting up a co-creation mechanism, based on Citizen Science[1] and Responsible Research & Innovation principles[2], where public authorities, citizens, SMEs and non-profit organisations can share ideas, tools, best practices and new models, supporting cities and regions in becoming innovative and sustainable food systems.

FoodE uses both primary data generated in the course of the project and secondary data from existing sources and also generates administrative data. Within the project, qualitative and quantitative analytical methods, such as surveys, interviews, case studies, modelling and simulation are used to generate, collect and process mainly numerical and textual primary data but also to process secondary data from already existing sources. Administrative data is generated through participatory activities and provided by stakeholders and pilots involved. In detail, data is or will be generated or processed, related to the project's objectives, tasks and purposes as explained in Table 1. For each type of data, Table 1 also indicates whether the data generation or use has been conducted already, is ongoing (e.g., for updates) or is planned.

Table 1. Summary of data collection purposes and type per WP tasks

WP	Purpose of data collection/task	Type of data and data source	Software and databases used

1	T1.4: Innovation management. Data to monitor innovations generated by the project	Primary data generation:
		- survey based on the Innovation Radar Initiative of the European Union, adopted to monitor innovation based on a common and consolidated monitoring framework (conducted and ongoing for updates);
		- data collected to gather information on the type of innovation, ownership, timeframe, target, and exploitation (conducted and ongoing for updates);
		- data related to intellectual property rights (IPR) collected from all project partners (conducted and ongoing for updates);
		- table developed to gather the following information:
		  - Type of innovation: new concept, knowledge, methods that could be translated into new products/services, standards, etc.
		  - Ownership: who is responsible for the innovation and what partners are involved
		  - Timeframe: indicative timing of innovation development
		  - Target: stakeholders and audiences concerned (in line with the dissemination and exploitation strategy)
		  - Exploitation: valorisation routes, including ownership and IPR (ongoing)
			Microsoft Office

[1] https://ecsa.citizen-science.net/wp-content/uploads/2021/05/ECSA_Ten_Principles_of_CS_English.pdf
[2] https://ec.europa.eu/programmes/horizon2020/en/h2020-section/responsible-research-innovation

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2	T2.1 Review and inventory of innovative CRFSI	Primary data generation: - surveys submitted to CRFSI leaders (conducted)	online survey tool (ARCTUR), data stored in secured database on Sphinx, Microsoft SharePoint, Microsoft Office, Google Workspace, audio files
		Secondary data use: - literature review on previous research and databases for CRFSI inventory and internet research for complementary information (conducted)	Scopus, WoS, web browsers
	T2.2 Methodological framework development	Primary data generation: - participatory consultations and interviews with pilot owners and selected CRFS stakeholders on methodological framework indicators and features during cross-pollination events, other events and project meetings and individual contacts (conducted)	Microsoft Office
		Secondary data use: - literature review on existing knowledge and tools for the integrated methodology development (conducted)	Scopus, WoS, Mendeley
	T2.3 Data collection and inventory	Primary data generation by survey: - technical aspects by sampling; - food supply systems and technologies data; - social aspects; - dietary habits, perceptions, values, and attitudes, food offer and food commercialization; - economic and costing aspects (conducted and ongoing)	online survey tool Qualtrics Microsoft Office, Sphinx, MATLAB, SPSS, RStudio, EnergyPlus, SimaPro, GaBi,
		Secondary data use (by literature review) to fill the gaps in: - safety issues and contamination risks and strategies for ensuring product quality; - growing systems used in innovative CRFS; - main social aspects; - dietary habits, perceptions, values, and attitudes, on food offer and food commercialization; - economic and costing aspects (ongoing)	Scopus, WoS, Mendeley, Endnote, Zotero, Ecoinvent, GaBi,
	T2.4 Assessment of pilots and identification of best performances	Primary data generation: - environmental, social, and costing aspects of selected pilots by interviews and field research (ongoing)	Google Workspace, Microsoft Office, SimaPro
		Secondary data use to fill the gap in: - technical, environmental, technological, and costing aspects of CRFSI by literature review (planned)	ecoinvent, SimaPro, GaBi
	T2.5 Pilot decision support tool and self-monitoring		Microsoft Office

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		No specific data collection is foreseen in this task, as data from other tasks will be used to develop a tool	
3	T3.1.MyLocalFoodE initiative creates a catalogue of networking and cross-pollinations initiatives in CRFS, creates stakeholder panels in partner cities and launches the MyLocalFoodE initiatives	Primary data generation: - survey distributed by email and webform to collect experiences and create a catalogue of initiatives (conducted) Secondary data use: - literature/web review for the catalogue (conducted) Administrative data generation: - personal data (names, e-mail addresses, phone numbers, social media accounts, personal views and opinions) provided by stakeholders and generated from MyLocalFoodE events (conducted and ongoing for updates); - contact list of local and national stakeholders and of participants in MyLocalFoodE events; consent forms for taking photographs during events (conducted and ongoing for updates)	Microsoft Office, Google Workspace WoS, Google Scholar, Scopus, Endnote Microsoft Office, Google Workspace
	T3.2 FoodE App intends to mobilise and interconnect users and stakeholders. Its development builds on a theory-based framework development for a CRFS-oriented App. It will be regularly updated and improved by evaluation of App data used	Primary data generation by - data stemming from T3.1, T2.1, T2.2 and T2.3 (ongoing); - from the use of the App and its environment, once this is fully functional (planned) Secondary data use by: - generation through extensive literature review (conducted); - "market research", study of existing applications (conducted) Administrative data generation: - personal data of registered users (registered users, consent-based)	Qualtrics, FoodE App, Èdit, iOS and Android Markets Scopus, WoS, Mendeley, iOS App Store and Google Play Store Microsoft Office
	T3.3 FoodE KidScience uses data to create awareness of school pupils, raise interest to engage in the MyLocalFoodE initiative and in the FoodE e-book for young minds	Primary data generation: - interviews and questionnaires applied to teachers (planned); - email and forms to collect experiences (planned); - interviews of stakeholders and experts and photography (planned) Secondary data use: - literature review, visual content from our archives, partners archives and other creative commons licensed resource (ongoing); - extensive literature review and other WP results (ongoing); - educational tools: photos, drawings and other infographics (ongoing) Administrative data generation: - list of schools (ongoing)	Microsoft Office, Google workspace, audio files search engines such as Ecosia, online databases (scientific and kid literature, photo databases), Adobe Photoshop, GIMP or similar Microsoft Office, Google Workspace Microsoft Office

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4	T4.1 FoodE "Calls for ideas" An open challenge for participatory co-design activities will be launched and selected CRFS project ideas will be awarded in a ceremony	Primary data generation: - surveys or questionnaires submitted to pilot owners about project status (planned); participatory activities and target stakeholders (conducted and ongoing for updates); - publishing the results from the open challenges (conducted and ongoing) Administrative data generation: - from pilots, relevant for internal communication (e.g., mailing list) and for public communication (e.g., address and coordinates of pilot site) (conducted and ongoing for updates); - from participatory activities (e.g., participant list) organized at the pilot locations/cities (ongoing)	Microsoft Office, Google Workspace Microsoft Office Microsoft Office Microsoft Office
	T4.2 Executive project finalisation	Secondary data use: - from data gained in T4.1	Microsoft Office, Google Workspace
	T4.3 Pilot implementation	Primary data generation: - of scientific value (e.g., yield, resource use, whether data etc.) on field research (manual collection, measurement devices such as sensors) (planned); - by surveys and interviews on technological upgrades in the different pilot categories (planned); - by multimedia data on pilots and on site-activities (photos, videos) for the public (ongoing); - by surveys submitted to FoodE partners for collecting information on previous activities linked to and/or relevant for pilot projects (e.g., size of the activities, type of service provided, number of beneficiaries) for comparative data before and after FoodE (planned) Secondary data use: - literature/web search and other WPs' results and databases for CRFSI inventory (for complementary information) (ongoing) Primary data generation: - sets of performance indicators (based on FoodE framework) for each pilot case and results from the actual monitoring and data collection (planned)	Standardized database (TBD aligned with WP2), MATLAB, RStudio, Microsoft Office, Google Workspace, online survey tools (TBD), CRFSI' official web pages, web browsers Scopus, WoS, Mendeley, Endnote, Microsoft Office TBD, compatible with the FoodE App
	T4.4 Participatory pilot monitoring	Secondary data use: - WP2 results and literature/web search (for complementary information) (planned)	web browser, Scopus, WoS)
5	T5.1 will classify CRFS business models and conduct SWOT analyses	Secondary data use: - by desktop research (state-of-the-art and developments on CRFS beyond FoodE: scientific literature, reports, other projects) (ongoing);	Microsoft Office, WoS, Scopus, web browsers

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		- data from T2.1 review and inventory (planned); - data from WP4 pilot implementation (planned)	
	T5.2 Definition of simplified dataset of indicators used for the online survey tool and certification standard	Secondary data use: - literature review (planned); - data from T2.4 CRFSI` sustainability assessment, T2.5 Pilot decision support tool and self-monitoring and T.4.3 pilot implementation (planned)	Microsoft Office, WoS, Scopus
	T5.3 Development of the online survey tool on the FoodE App for different user groups	- data from T2.5 Pilot decision support tool and self-monitoring (planned) - depending on T.3.2 FoodE App development (planned)	Microsoft Office, FoodE App, Èdit
	T5.4 The FoodE label serves as a standard certification scheme for CRFS	Secondary data use: - data on T2.4 CRFSI' sustainability assessment (planned); - data from T4.3 and T.5.2 (simplified dataset of indicators) (planned); - state-of-the-art literature review on labels (planned)	FoodE App, CO20ZWaste, LCA database, GaBi, ecoinvent, SimaPro
6	T6.1 will analyse EU and national framework conditions and policies and identify constraints and challenges	Primary data generation: - collection of publicly available policy and planning documents by online survey (planned) - qualitative interviews for content analysis (planned) - workshops with stakeholders (planned) Secondary data use: - analysis of publicly available policy and planning documents and literature (planned)	Google Workspace, online survey tool (TBD) audio files, MaxQDA, Microsoft Office, Mentimeter WoS, Scopus, Zotero
	T6.2 will analyse the roles and relationship of different actors in the food system	Primary data generation: - additional interviews and observations in case study cities (planned); - workshops for participatory network analysis (planned) Secondary data use: - data from T4.3, T6.1 and T7.2.1 (planned) - Visualisation of actors´ networks (planned)	audio files, MaxQDA, Microsoft Office, interview-based mapping tool (Net-Map) Microsoft Office, Software for creating visual maps (e.g., InDesign)
	T6.3 Framework development for the replication of best practices	Secondary data use: - data from T.2.5, T4.3, T6.1 and T6.2 will be used to identify factors of success or failure (planned)	STATA, Microsoft Office
	T.6.4 Development of scenarios for upscaling and of a guidebook	Secondary data use: - data from T6.1, T6.2 and T6.3 will be used for upscaling and recommendations (planned)	Microsoft Office Miro Software for creating visual maps (e.g., InDesign)

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7	7.1 Planning and coordination of internal communication and dissemination activities including visual identity, dissemination and communication strategy, website	Primary data generation: - visuals and texts designed by HCA and all FoodE partners (ongoing); - website technology developed by HCA, and be provided for external users, no sensitive personal data will be included within website (ongoing) Secondary data use: - images and photos be provided by partners and collected from free-to-use sources on the internet (ongoing)	Illustrator, Microsoft Office, video recording software iMovie, WordPress free photo repositories (Pixabay, Pexels, Unsplash, etc.)

	T7.2 The visibility and participation strategy generates strategic texts and visuals. It builds on stakeholder mapping and analysis, press communication and social media activities, assures a long-term run of the MyLocalFoodE and launch the final event	Primary data generation:
		- visuals and social media posts, news items, events descriptions, newsletters, press releases designed by HCA based on desk research and inputs provided by partners (ongoing)
		
		Secondary data use:
		- images and photos provided by partners and collected from free-to-use sources on the internet (ongoing)
		
		Administrative data:
		- personal data (names, e-mail addresses, phone numbers, social media accounts, personal views and opinions) from
		  - Stakeholders;
		  - participants in MyLocalFoodE initiative events;
		  - organisations from the inventory of innovative CRFS (T2.1);
		  - participants in the final event (ongoing)
			Illustrator, Photoshop, Microsoft Office, Canva
			
			Free photo repositories (Pixabay, Pexels, Unsplash etc.)
			
			Google Workspace, social media account, Microsoft Office

	T7.3 Exploitation strategy generates strategic texts and visuals, collects contact details and information from stakeholders	Primary data generation: - visuals and texts designed by HCA (ongoing) Secondary data use: - images and photos provided by partners and collected from free-to-use sources on the internet (ongoing) Administrative data: - personal data (names, e-mail addresses, phone numbers, social media accounts, personal views and opinions) provided by stakeholders (ongoing)	Illustrator, Microsoft Word, Canva Free photo repositories (Pixabay, Pexels, Unsplash etc.) Microsoft Office
	T7.4 Practice abstracts will generate strategic texts and visuals	Primary data generation: - visuals and texts designed by HCA (ongoing) Secondary data use: - images and photos provided by partners and collected from free-to-use sources on the internet (ongoing)	Illustrator, Microsoft Word Free photo repositories (Pixabay, Pexels, Unsplash etc.)
8	Ethic requirements	No data used or generated	-

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1.2 Type and formats of data

FoodE generates primary quantitative as well as qualitative data, re-uses secondary data and organizes administrative data. The preferred data file format is a commonly accepted format (Table 2). Export or conversion to standard file formats should be aimed at.

Table 2. Summary of data formats

Type of data	Formats used	Formats for sharing, re-use and preservation
Numerical or textual data	Microsoft Office (.xls/.xlsx; .doc/.docx; .ppt/.pptx) googledocs etc.	numerical: comma-separated values (.csv) Rich Text Format or text (.rtf/.txt) document with fixed formatting (.pdf) Google Workspace formats
Video data	mp4 format (.mp4)	format for videos
Visual data	jpeg, .png, .svg, .tiff, gif, RAW (nef, orf or similar)	photo material (.jpeg, .png, .svg, .tiff, gif, RAW (nef, orf, or similar))
Audio data	mp3 format (.mp3)	audio recordings will be deleted after their transcription and only the processed transcripts will be shared and preserved
Statistical data	Stata format (.dta)	comma-separated values (.csv); Stata format (.dta); R scripts (.R)
Modelling data	MATLAB (.mat)	numerical: comma-separated values (.csv) Rich Text Format or text (.rtf/.txt)

Documentation files explaining all relevant details regarding data collection, processing methodologies and quality assurance are and will be deposited in institutional or public repositories along with the data sets in .odt, .rtf, .xls, .doc or .pdf formats. Spatial (GIS) data, and any non-standard file formats, will be stored together with the information about the appropriate software to guarantee long-term data access.

1.3 Data re-use

The FoodE project capitalises on efforts to integrate existing knowledge and therefore re-uses existing data for stocktaking. Existing data is used where appropriate as part of state-of-the art analysis referring to all relevant thematic contexts of CRFS, e.g., business models, social inclusion, urban regeneration, community building, ecosystem services and sustainability assessment. The backbone of FoodE´s objectives originates from key projects and initiatives conducted by the project partners in recent years and on which the project can built (see Table 3).

Table 3: Key projects conducted by FoodE project partners in recent years

Title	Timeline	Focus
EUPHOROS	2008 - 2012	Environmental impact of greenhouses
Ecotech Sudoe	2011 - 2013	Social and Environmental LCA
FertileCity	2014 - 2019	Integrated rooftop greenhouses
UrbanGreenTrain	2015 - 2017	Urban agriculture training curriculum
SUSTURBANFOOD	2016 - 2018	Urban food systems methodological framework
Groof	2017 - 2021	Integrated rooftop greenhouses
FEW-meter	2018 - 2021	Circular urban metabolism
Newbie	2018 - 2021	Innovative business models
VALUMICS	2018 - 2021	Sustainable food supply chain drivers

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1.4 Origin of data

Various types of datasets are generated in FoodE (see Table 1). Besides data collected from existing quantitative databases (secondary data), the generated primary data originates from social-empirical research, such as surveys, interviews or events. Further data will be generated by conducting experiments as well as assessments of innovative CRFSI and use of the FoodE App.

1.4.1 Survey data

Various surveys have been conducted and are planned in order to collect information on innovative CRFS, stakeholder mapping and governance analysis. In July 2020, a first survey was prepared to collect data from more than 600+ potentially innovative CRFSI and initiatives all over Europe (WP2, task 2.1) by means of an online questionnaire. Questions addressed besides personal information, the type, main activities, size of the initiative, its relations to other key partners, its impact and the impact of the COVID-19 crisis.

In July 2021, a second survey was designed to collect data for the simplified sustainability assessment of 100+ CRFSI all over Europe (WP2, Task 2.2, 2.3) by means of an online questionnaire. Other than details on name and location of the CRFSI, questions addressed characteristics related to job creation & quality, community outreach, engagement & education, food quality and safety, cost & profitability, market potential and customer profile, environmental details concerning primary production, resource use efficiency, waste management and transport.

Surveys have also been used to involve all FoodE stakeholders in the App development process. A description on these can be found in Deliverable D3.7. For example, online questionnaires were used to collect information on the planning and type of co-design activities organized at the 15 CRFS pilot projects (WP4, task 4.1) and to create a catalogue of local initiatives (WP3, task 3.1). Questions addressed the type, description and number of activities, type and number of participants, proof of participation, and main outcomes. The collected information can be found in Deliverable D4.1, D4.2 (concluded) and D3.6 (planned).

Other surveys will follow in the project, utilizing a range of response types include numerical information, predetermined choice options, text, etc. For example, WP4 will make use of questionnaires to regularly monitor (e.g., on a 3-to-6-month basis) pilots´ progress against pre-defined targets. The information collected depends on the pilots´ initiatives and will cover, for example, the number of vulnerable people involved, number of citizens/farmers/schools involved, number of training and educational activities organized, volume of food production, etc. This will allow progress to be tracked over time and ensure that goals are met at the end of FoodE.

1.4.2 Interviews

Various consortium project partners will conduct qualitative face-to-face interviews, in person, by phone or video connections. Interviews will be conducted e.g., in WP 6 with policy-makers and other stakeholders to identify supportive and hindering policies for sustainable CRFS.

Most interviews will be of semi-structured nature. Interviewees will be informed in advance (via email, phone or face to face) about the purpose and context of the interviews, and are requested to sign and return an informed consent form (scanned pdf) or to express consent orally in the

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recording of the interview. The transcripts of the qualitative interviews will be sent to the interviewees for comments and approval upon request.

Neither the recordings nor the individual interview summary as interview datasets are public research material, but may be made accessible in case of later needs, e.g., for academic peer review purposes in an anonymized format. Synthesis of clusters of interviews can be considered for publication in scientific articles but also in policy, business and management briefs. The basic set of questions for interviews may be published as well. Synthesizing interpretations of the interviews are presented in various WP deliverables.

1.4.3 Events and Workshops

Within WP3, a series of dissemination and awareness creation events has been and will be conducted (MyLocalFoodE Initiatives). Open-science events organized by HEIs, roundtables involving CRFS managers and NGOs, initiatives devoted to young minds and organized by school pupils have been and will be organized. Partly, and due to COVID-19 crisis, these events have been held online, and have been recorded upon consent of the attendants. Programme, activities and summaries are eligible for publication on the website and submission of copies to third parties.

Data collected from dissemination activities involving school pupils is used to support research activities in awareness creation for young people. Data is used in public events, among MyLocalFoodE initiatives, with the purposes to: i) return feedback of the in-class experience to the involved kids and their families; ii) engage school pupils in presenting sustainable CRFS concepts; and iii) develop (e.g., within hackathons) innovative strategies for developing innovative CRFS in their regions. Awareness creation activities for school pupils will be included in the European Guidebook to Sustainable CRFS.

Within WP4, e.g., various types of online or on-site events and activities (including workshops, discussion groups, student projects and student competitions) have already been organized by CRFS pilot initiatives to involve citizens and other relevant stakeholders in the co-design and co-creation of their pilot projects. A description of these events and activities can be found in Deliverable D4.1. The information collected are used to newly design pilot projects or improve and integrate already existing projects with innovative food production systems, technologies, business models, social innovations.

Workshops also have been organized to involve all FoodE stakeholders in the App development process. A description on these events can be found in Deliverable D3.7.

1.4.4 FoodE App

The FoodE App is a core element of the project. By actively participating in the development of the FoodE App, users will not only become aware of local initiatives, but also engage in the cross-evaluation of existing CRFSI, therein accessing benefits and services provided by CRFSI catalogued in the database. The App will continuously evolve during the project, collecting inputs from both the pilot implementation (WP4) and the indicators´ identification and validation phase (WP2 and WP5). Additionally, the FoodE App is linked to the exploitation strategy and exploitation plan to develop the App considering all CRFS stakeholders (WP7).

During the project, participants' data (both from initiatives and regular users) is collected in the FoodE App after an acceptance of an informed consent. The data collection through the App and its processing and use has been validated by the Data Protection Delegate and the Ethical

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Committee from UAB following the regular institutional procedures. Data collected will be used for two main purposes:

- first, data will be used for reports, articles, infographics with research purposes linked to the FoodE project;
- second, data will be used for the App itself to power a strong network of initiatives involved in the CRFS. This data will allow the App to calculate the sustainability performance of the initiatives and other Key Performance Indicators (KPIs).

Other objectives of the data gathering through the App are: dissemination of information, promotion of CRFSI products and services, promotions of events at the CRFSI level, engage in environmentally-oriented loyalty programme, engage in promoting special benefits and awards and to share FoodE research findings.

1.5 Size of data

The expected size of data is estimated to not exceed 50 GB. This does not include the size of data of the App which still cannot be calculated at this stage.

1.6 Data utility

The generated data produced can be relevant for different user groups. They include practitioners (management, policy, stakeholders) who may benefit from data generated on how to improve interactions within actors of the food chain, for empowering local communities and for cities interested to become sustainable food-hubs.

The scientific community may benefit from data generated to develop and test method for assessing the sustainability of CRFS: The data could also be used as a source for further studies, comparisons and for different analyses e.g., in other spatial contexts in Europe and beyond.

2 FAIR Data

This DMP follows the EU guidelines[3] and describes the data management procedures according to the FAIR principles. The acronym FAIR identifies the main features that the project research data must have in order to be **f**indable, **a**ccessible, **i**nteroperable and **r**e-useable, allowing thus for maximum knowledge circulation and return of investment.

2.1 Making data findable, including provisions for metadata

Research data in FoodE is organized in a transparent and standardized way in order to make it findable over a long period of time. Minimal agreements for file formatting assure meaningful data storage.

2.1.1 Findability and metadata provision

Data collected/generated by FoodE, either as intermediate or final product such as deliverables, reports, factsheets, guidelines for training etc., is made available to all project partners for practical use within the project. For that reason, the data management system 4PM provided by ARCTUR had been used until the exit of ARCTUR from the project by end of July 2021. Since then, all information collected in FoodE by the consortium partners as part of WPs and task

[3] Guidelines on FAIR Data Management in Horizon 2020 (Version 3.0, 26 July 2016), http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/oa_pilot/h2020-hi-oa-data-mgt_en.pdf

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activities migrated to SharePoint, a web application by Microsoft, which serves as a central mean for internal data storage and information exchange among all consortium partners. This platform is regularly updated, and the data quality is controlled by the coordination team from UNIBO, with the overview from the steering committee (SC). SharePoint is password protected, accessible only by assigned project partners. It will be used through the whole project`s lifetime. After the project ends, data will be archived for at least one additional year.

If there are no objections from the point of view of the grant agreement and the consortium agreement, and if the considered data is not subject to sharing limitations due to EU regulations, collected and processed data is supposed to be made available as open access for third parties beyond the consortium through data publications and will be advertised and linked via the FoodE website www.foode.eu and other means of dissemination in social media. An exception can be made for those data of which a majority of the consortium is of the opinion that there is no value added for third parties or if the data generator is not interested in facilitating access to the broader public.

To make availability meaningful for third parties the information should be easy to find and identify. At the moment of publication of project results, each research team will deposit and describe the relating underlying data set(s) in institutional or public data repositories that can attribute persistent unique identifiers to the deposited item. Partners are strongly recommended to use the persistent unique identifiers (DOI or Handle[4]) to cite the data sets as underlying data within their research publications.

Table 4 provides an overview on the institutional repositories that have be used so far for depositing publications and data. As a general rule, Zenodo[5] will be used for open dissemination and preservation of research data by all research teams that do not have suitable institutional, national, or disciplinary data repositories.

Table 4: List of repositories used by FoodE partners (status as of M24)

Partner	Repository
UNIBO	**AMS-Acta** (http://amsacta.unibo.it/) for internal publications **CRIS** (https://cris.unibo.it/) for scientific publications
INRAE	**HAL** (https://hal.inrae.fr/)
UAB	**DDD** (https://ddd.uab.cat/)
WUR	**Research output of Wageningen University & Research staff** (https://library.wur.nl/) for scientific publications **Zenodo** (https://www.zenodo.org)for data depositions

For data that cannot be shared, meta-information will be made available for third parties, as much as possible in compliance with the OpenAIRE 3.0 requirements for data archives[6]. As a consequence, the project data sets will be visible through the OpenAIRE portal[7], facilitating project reporting procedures. Likely, standards are applied similar to e.g. The Dublin Core Metadata Element Set (ISO Standard 15836) as a basic standard which is widely applied, well understood and implemented[8].

[4] https://www.doi.org/factsheets/DOIHandle.html
[5] Zenodo, https://www.zenodo.org
[6] OpenAIRE Guidelines for Data Archives https://guidelines.openaire.eu/en/latest/data/index.html
[7] OpenAIRE https://www.openaire.eu/
[8] Dublin Core Metadata Initiative http://dublincore.org/

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The provided metadata will include the following variables:

- Original purpose, project WP/task
- Data type (qualitative or quantitative; primary or secondary)
- Data collection method
- Data analysis method
- Creation date/period
- Creator (name, email)
- Owner(s) (organisation(s) + prime contact)
- Data product
- Author of data product
- Kind of quality check (e.g., none, peer-reviewed)
- Level of openness; allowed types of re-use (incl. licenses)
- Link to the content of work packages.

Specific keywords derived, when possible, from Thesaurus[9] and controlled vocabularies will be associated to each data set to enhance semantic discoverability.

2.1.2 Naming conventions

All FoodE documents should be provided with a unique filename to ensure effective version control and data storage. Naming conventions so far are proposed for the following items. (Table 5).

Table 5: Naming conventions for files

Document status	File name
Meeting agendas and minutes	
Draft	FoodE_WP<WPno.>_<Type>_<Date of meeting>_<Agenda or Minutes>_V<version no.> e.g. FoodE_WP1_kickoff_20200213_Agenda_V3
Final	FoodE_WP<WPno.>_<Type>_<Date of meeting>_<Agenda or Minutes e.g. FoodE_WP1_kickoff_20200213_Agenda
Deliverables, Milestones and Reports	
Draft	FoodE_WP<WPno.>_<Del. Or Mil. Or Rep.no.>_<YYMMDD>_V<version no.> e.g. FoodE_WP1_D1.6_200310_V1
Final	FoodE_WP<WPno.>_<Del. Or Mil. Or Rep.no.>_<resp. beneficiary> e.g. FoodE_WP1_D1.6_ILS
Presentations	
Draft	FoodE_<conf. title>_<authors>_<YYMMDD>_V<version no.> e.g. FoodE_SURE2020_Specht_etal_200515_V1
Final	FoodE_<conf. title>_<authors>_<Date of conf.> e.g. FoodE_SURE2020_Specht_etal_200706
Conference and Journal Papers	
Draft	FoodE_<journ. or conf. title>_<authors>_<YYMMDD>_V<version no.> e.g. FoodE_Sustain_Specht_etal_20200515_V1
Final	FoodE_<journ. or conf. title>_<iIssue or Conf. date>_<authors> e.g. FoodE_Sustain_15_Specht_etal
Images	
Photos	FoodE_<location>_<YYMMDD>_<author>_<copyright restricted or free> e.g. FoodE_Bologna_191020_Specht_restricted
Others (diagrams, etc.)	FoodE_<title>_<authors>_copyright restricted or free e.g. FoodE_GattChartDeliverables_Orsini_free

These naming conventions are obligatory for any data that is stored in the SharePoint and in repositories. It is advisable to generally follow the proposed naming conventions for any data created in FoodE. For the storage of data within the SharePoint sections for each WP are

[9] https://www.thesaurus.com/

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provided. Subfolders are named according to the WP tasks. All contributors to the FoodE project have been instructed in benefitting as much as possible from the SharePoint.

2.2 Making data open accessible

In general, all data is accessible by all consortium partners via the password protected SharePoint web application by Microsoft. Partners can access all areas of WPs in which they are involved.

As a guiding principle, FoodE seeks to make research data openly available, whenever possible, in order to allow dissemination, validation and re-use of research results. To achieve this, FoodE will follow the "Guidelines to the Rules on Open Access to Scientific Publications and Open Access to Research Data in Horizon 2020" to adhere to the rules on open access to scientific peer reviewed publications and research data that will be generated along the project[10]. For this purpose, all files will be converted to standard and well-documented open formats and the data sets will be deposited together with all relevant documentation and explanation.

Restrictions on data access or impossibility to share them will be considered only in the following cases:

- collected data belonging to third party which have denied permission for sharing them on account of confidentiality and proprietary issues;
- protection of personal data of key informants involved in surveys, events, interviews, and case studies;
- when availability of the data would mean that the project's main aim might not be achieved (in this case reasons will be explained in the meta data description).

As a consequence, all possible and legitimate actions and strategies will be adopted to allow data sharing including:

- converting the files to standard open formats;
- providing all relevant documentation and explanation for the data and the data sets;
- obtaining the consent of stakeholders involved in events or interviews for using anonymized and aggregated data of statements or interviews;
- obtaining copyright permissions from third party data owners to be allowed to re-use, reproduce and distribute the collected data;
- in case of copyright on raw data derived, collected or elaborated from pre-existing databases or from other original sources (i.e. papers, journal articles, book chapters, reports, video and audio sources), collected data will be made available if the reproduction and sharing are allowed by expressed permission of the right holders or by applicable copyright exceptions and exemptions.
- Specifically, reproductions and communication of brief excerpts of texts and of other protected works are permitted for illustration purposes for scientific research, provided that the source, including the author's name, is acknowledged and provided that the use does not conflict with the exploitation of the original source and does not unreasonably prejudice the legitimate interests of right holders. Otherwise, only aggregate data resulting from the analysis will be openly published.
- When the sources are freely available on-line in their original repositories, but direct reproduction is not allowed, a detailed account on how the data set was created from the original data will be provided, together with the specification of open repositories from

[10] https://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/oa_pilot/h2020-hi-oa-pilot-guide_en.pdf

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where the original data sets are available. Raw data consisting in full-texts will not be made available without copyright holders permission.

Final products as specified in the GA (such as policy/business briefs, handbooks, journal articles etc.) are accessible publically via the webpage. Information planned to be made accessible for third parties will be reviewed with respect to data quality and data protection regulation prior to its submission to facilities/third parties and will be anonymized following the principles of research integrity, the responsible conduct guidelines of the partner organizations, and the European Code of Conduct for Research Integrity (ALLEA 2017[11]).

Each different data set is deposited by the team that is responsible for the data collection and management in the repository of their choice (see Table 4). It is required that chosen repositories are indexed in OpenAire[12] or listed in the Registry of Research Data Repositories.[13] As a general rule, Zenodo[14] will be used for open dissemination and preservation of research data by all research teams that do not have suitable institutional, national, or disciplinary data repositories.

To facilitate intelligibility and reuse, the data sets will be deposited in the data repositories along with all relevant documentation explaining data collection procedures and analysis.

In general, there will be no need to use specific software to access project data, since researchers will convert the data into open formats. In case particular software is used in data processing, full explanation and instructions will be included in the deposited documentation (tools and software necessary to reuse of data sets are described in 1.2 and Table 2).

All data containing personal or sensible data will be shared only in anonymized form and in line with Deliverables 8.1 und 8.2. In case of specific requests of access to restricted data by single researchers, research institutions, reviewers and committee, aimed for example at verifying the quality of the research results and at reproducing them, UNIBO will act as contact point and will evaluate each request consulting the Partner(s) that produced the requested data.

2.3 Making data interoperable

FoodE will use common data formats as described in section 1.2 and 2.2. All data sets will be described using standard descriptive metadata, as described in section 2.1 and DataCite Metadata Schema[15] in order to ensure metadata interoperability for indexing and discoverability. All relevant documentation explaining codebooks, users' manuals, data collection procedures and analysis will be made available along with the data in order to guarantee intelligibility, reproducibility and the validation of the project findings.

Categories regarding official data relative to EU funded projects included in Annex II of commission regulation (EC) No 1828/200611[16] will be used to name the variables analysed within the project. In the same way variable names of data derived from other official sources, such as Eurostat, will be consistent with the original source names. Variable names of data derived from surveys will match the survey question items as closely as possible.

[11] https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/european-code-of-conduct-for-research-integrity_horizon_en.pdf
[12] OpenAIRE, https://www.openaire.eu/
[13] Re3data, https://www.re3data.org
[14] Zenodo, https://www.zenodo.org
[15] https://schema.datacite.org/meta/kernel-4.0/doc/DataCite-MetadataKernel_v4.0.pdf
[16] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:02006R1828-20111201

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2.4 Increase of data re-use

FoodE supports the European 2020 strategy in boosting and enabling innovations at European scale. Through their consortium organisations and individual members, the partners have close links to related national and international projects, policy and innovation initiatives carried out by various partners within the project consortium.

In case FoodE data is reused in another project or an operational group, a link should be provided from the original project folder to the new project. As a principle, datasets should never be duplicated and/or moved to a different project without reference to the FoodE project. In case of duplicating datasets for reanalysis or new visualizations within other projects the original dataset is conserved in a folder including date stamp. The duplicate is saved in a new folder including date stamp and reason for duplication.

Files to be made accessible for third parties will be declared under Creative Commons Licensing[17] system, the recommended options are:

- Attribution-ShareAlike 4.0 International (CC BY-SA 4.0)
- Attribute 4.0 International (CC BY 4.0)

CC BY 4.0 license permits users to freely share, modify, and use the data, subject only to full credit to the author(s). As an exception, CC BY NC 4.0, which requires full credit but limits reuse for commercial purposes, will be chosen when the data is collected from pre-existing sources that limit their free reuse (for example, when exception for illustration for scientific research is applicable, the reproduction of short excerpts will be possible only for not-commercial purposes).

3 Allocation of resources

Responsible for data management are the data set creators who are generally the leaders of the WPs directly involved in the data generation and collection. All project partners have to be aware that making data FAIR requires a certain share of person-months. This includes e.g., the conversion of data files into open source formats, gaining permission for re-using data from other contexts, and deposit procedures. All WPs in which data is created or used are involved in this task and have to contribute to FAIR data management as part of the allocated budget.

The costs for implementing and running the data management on SharePoint platform up to one year after the termination of the project are included in the budget of UNIBO.

On partner level, all FoodE partners who intend to publish scientific papers have allocated costs in their budgets for open access publications. Costs for setting up and maintaining the website Foode.eu at least three years after the termination of the project were covered in the budget of ARC and have been transferred to HCA that now maintains the website after the exit of ARC.

There will be no costs for depositing public shareable data as the chosen repositories do not apply fees for data storage.

The costs for coordinating the data generation and use by the partners, for preparing and updating the DMP, and for providing guidance on data management and open access issues, account for 5 person-months for the whole duration of the project and are included in the budget of ILS.

[17] https://creativecommons.org/about/cclicenses/

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4 Data security

The SharePoint web application for internal data sharing and knowledge exchange is password-protected as here sensitive data such as minutes from internal meetings etc. are stored for internal transparency.

Backup procedures are implemented and controlled by the coordinator (UNIBO). At each institution, research data will be stored in computers, laptops, intranets or hard-drives accessible through institutional password periodically modified according to national law provisions for data security and protected by regularly updated antiviruses. None of the project data will be left inadvertently available.

Long term preservation of public data is ensured by the chosen data repositories that have specific preservation policies. Zenodo policy e.g. ensures that the items will be retained for the lifetime of the repository and in case of closure, best efforts will be made to integrate all content into suitable alternative institutional and/or subject based repositories.

5 Ethical aspects

Each partner participating in the project, fully complies with the principles and standards sanctioned by the General Data Protection Regulation (GDPR) which provides a common legal framework for all EU Member states and sets guidelines for the collection and processing of personal information of individuals within the European Union (Regulation 2016/679 EU).

All FoodE activities are following the guidelines from the German Research Foundation[18]. This includes that all authors of publications agree on the sequence of authorship, acknowledging that authorship itself is based on a significant contribution to the design of the research, relevant data collection, or the analysis or interpretation of the results.

Further all FoodE partners follow the responsible conduct guidelines of their organizations as described in detail in D8.2 - Protection of personnel data. D8.2 contains detailed information on the procedures that are implemented in each partner organization for data collection, storage, protection, retention, and destruction in compliance with national and EU legislation. Deliverables D8.1 – Humans details the procedures and criteria that will be used to identify and recruit research participants, as well as it contains information on the informed consent procedures that will be implemented for the participation of humans, before research activities start. In all forms of stakeholder interactions, participants will be informed that participation is voluntary, that consent can be refused and that withdrawal is possible at any time.

Data collected for analyses will be recorded and anonymised so that individual identification of participants is not possible, securing data protection and privacy. Contact information for actors willing to share their experiences will only be made available when stakeholders explicitly agree to it. To secure the rights and acknowledge the contributions of participants, all participants in the innovation action haven been and will be invited to provide feedback on participatory events, and provide summaries on the project outcomes. Those participants who contribute substantially, e.g., by describing innovations in detail, will be directly acknowledged at their consent.

[18] https://www.dfg.de/download/pdf/foerderung/rechtliche_rahmenbedingungen/gute_wissenschaftliche_praxis/kodex_gwp_en.pdf

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The project SC will raise the question of ethical issues including data collection/generation on every meeting of the consortium in order to keep the awareness of their sensitivity among all partners, in particular when it comes to assessment approaches and initiatives in which school kids will be involved.

6 Other issues

In order to ensure guidelines for selection, quality assurance and data protection, all project partners are informed about the details of this Data Management Plan. In addition, the Coordinator and the SC will oversee the adequate implementation of the open data availability via the website and other means.

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